THE IRON AGE

New York, December 4, 1924

ESTABLISHED 1855 VOL. 114, No. 23

Making Steel Tubes for Roller Bearings

Electric Furnace Plant for Alloy Steel—From Ingot to Seamless Tube in a Series of Mills—Piercing Mill Used

BY F. L. PRENTISS

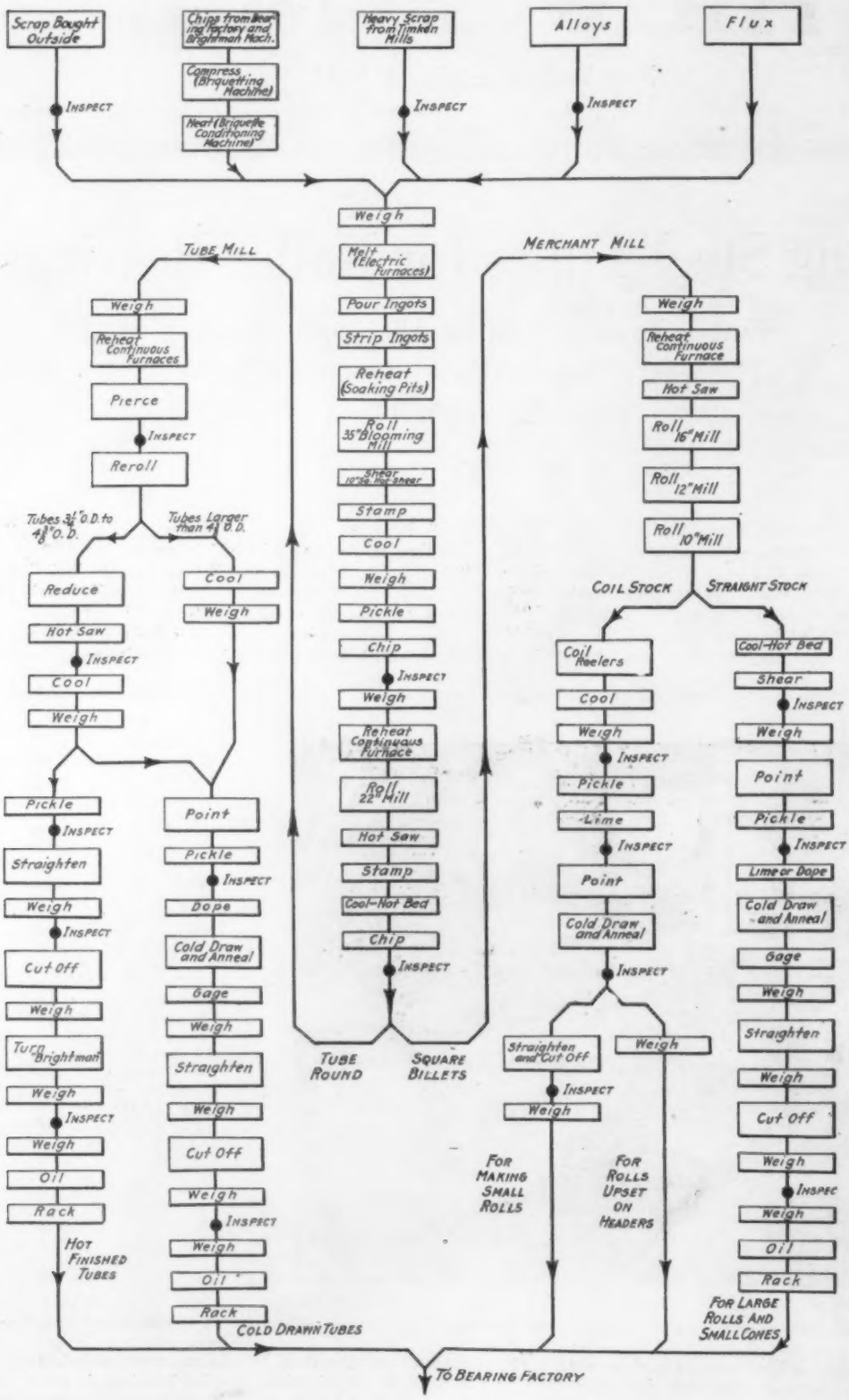
ADDITIONS to the steel plant of the Timken Roller Bearing Co., Canton, Ohio, of a 35-in. blooming mill and soaking pits have given the company a complete modern type steel making plant. This company has for some time past occupied a unique position in that it manufactures not only a highly finished steel product but also all the alloy steel required in making that product. The latest additions enable the company to supply outside customers also with electric alloy steel. The products made aside from roller bearings, comprise hot finished and cold drawn seamless steel tubing, merchant bars and cold drawn wire.

The first Timken roller bearing was made in a small shop in St. Louis, this being only a plant for assembling bearing parts made to order by other concerns. In 1901 the company moved to Canton and began, in a small way, to manufacture its own parts. From this modest beginning has grown a plant covering 24 acres. In addition the company has built a plant at Columbus, Ohio, which started operations late in 1919. The output has grown accordingly, so that now 110,000 complete bearings can be turned out in a day. When running to full capacity the company has 6200 on the pay roll, 800 of whom are employed in the steel plant.

This recent increase in capacity permits the company to turn its attention vigorously toward applications of roller bearings in the general industrial field, which had been neglected heretofore because the entire output was absorbed by the automotive industry. To develop the application of roller bearings in other fields, the steel plant has been equipped generally with Timken bearings and new applications are constantly being added. Several of these installations that are of special interest are referred to in this article.

Rolling of steel by the company began in 1916 with the operation of a Mannesmann mill (described in THE IRON AGE of April 27, 1916) for the manufacture of 3 to 6-in. seamless steel tubing. Since then various units have been added and the plant now comprises four Heroult electric furnaces, a 35-in. three-high blooming mill, a 22-in. billet and bar mill, a 16, 12 and 10-in. merchant mill, a seamless tube mill complete with

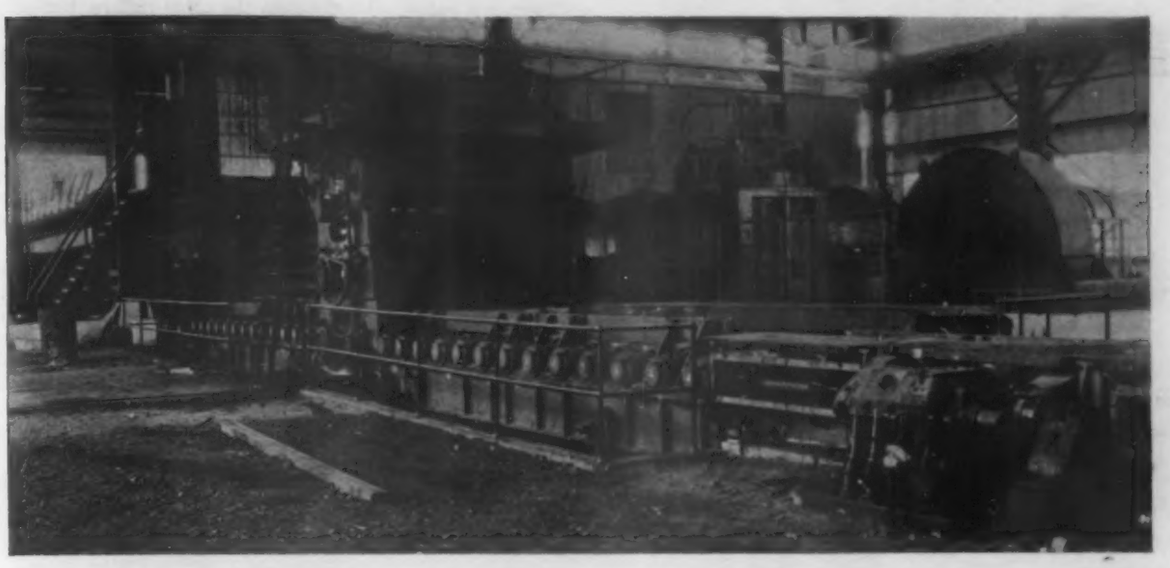
SOAKING Pit Crane Delivers the Ingot from the Soaking Pits (just off the left of the picture) onto a Platform Alongside the Blooming Mill Approach Table. Then a pusher in the pit in the foreground pushes the ingot onto the blooming mill table, thus eliminating an ingot transfer buggy



"FLOW Diagram" from the Raw Materials to the Time the Rods or Tubes Enter the Bearing Department. The care taken in inspection is emphasized. It will be noted that some material is heated four times

all necessary auxiliary rolling, cold drawing and finishing equipment and a department for the cold drawing of rods and wire.

Timken roller bearings, while manufactured in a wide range of sizes are made up essentially of four parts: an inner race or "cone," an outer race or "cup," a set of tapered rollers and a "cage" for spacing the rollers. The races are turned from hot finished or cold drawn seamless steel tubing, the rollers from cold drawn merchant bars or wire and the cages are stamped from strip steel, the latter being the only steel bought outside. Due to the severity of the service to which a roller bearing is subjected, it is of paramount importance that the steel be free from defects. Inspection therefore is rigid and frequent, and becomes more frequent as the material progresses through the



Rear of the Blooming Mill, Showing the Construction of the Guide Boxes on the Delivery Side

bearing factory. This article is confined to the making and shaping of the steel up to the point where it is delivered to the bearing factory.

Electric Furnace Department

All steel is made in electric furnaces from select heavy melting scrap. The scrap comes partly from outside sources and partly from the company's own plant. The light scrap, consisting of turnings and borings from the bearing factory and tube mill, being unfit for electric furnace consumption due to its bulk and low specific weight, was up to two years ago sold in the market. Now a briquetting machine compresses this material into a cylindrical briquette 7 in. in diameter and 4 to 5 in. thick, having a density of 70 per cent of a solid. The hourly production of this machine is 6½ net tons. The turnings are mostly trucked to the machine from the different shops but in the near future a complete suction system for conveying them will be installed. The chip-handling method will be described in THE IRON AGE next week.

Four basic Heroult electric furnaces are of a nominal capacity of 6 tons each; space is provided for two additional furnaces. The pouring platform is located directly across from the furnaces. Recently the furnaces have been equipped with new Westinghouse 2500 k.v.a. transformers with taps at 190, 173 and 150 volts for melting down and 110, 95 and 80 volts for refining the charge. The heat, weighing 18,500 lb., is melted down in 1½ hr., while the refining, due to the high quality of the steel, takes 2 hr. or more. The total output of the four furnaces averages 200 tons in 24 hr.

All heats are top-poured into specially designed, inverted polygon shaped Gathmann molds on cars and transferred by standard gage cars to the soaking pits. One heat makes four ingots of 4300 lb. each and each ingot car carries one heat. The ingot cars, furnished

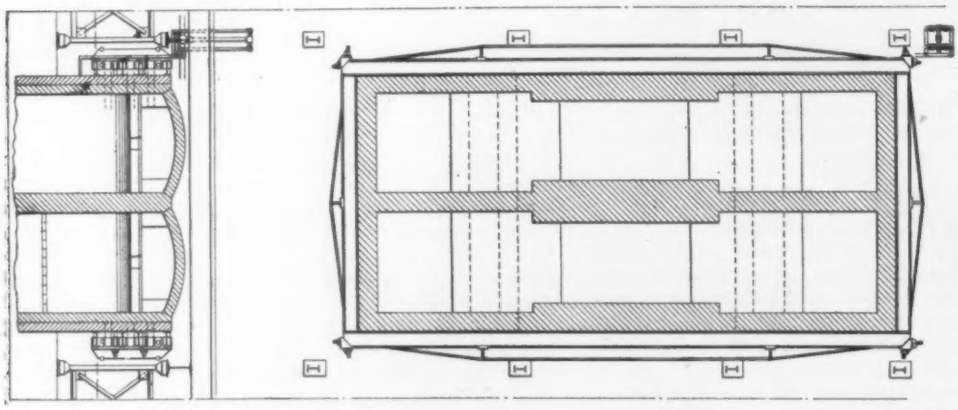
Vertical Shear Back of the Blooming Mill; It Has Neither Clutch Nor Flywheel, but Is Direct Connected to the Motor and Is Operated by a Master Controller. This picture shows the simplicity of the motor drive

by the Alliance Machine Co., are provided with Timken bearings.

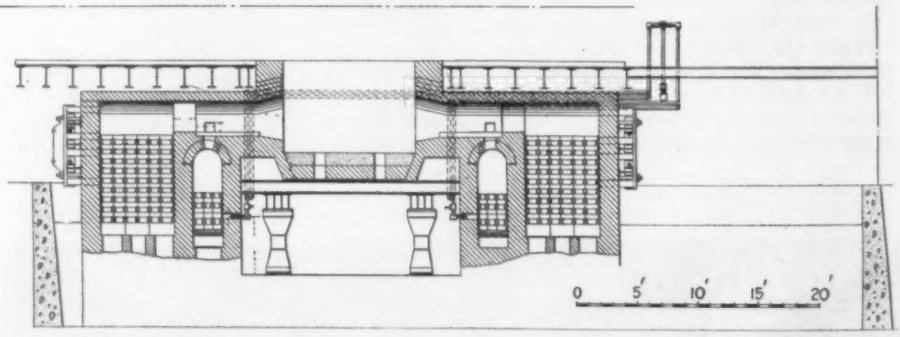
Soaking Pits

Soaking pits recently built replace the pits that were located near a hydraulic press formerly used for breaking down the ingots. They are housed in a new building 65 ft. wide and 160 ft. long, with a lean-to 29 ft. wide, in which the valves are located. There are three groups of two holes and one stack each, each hole measuring 6 ft. 6 in. x 11 ft. and holding from eight to ten ingots. The pit covers are screw operated and run on Timken bearings. The end thrust from the screw is taken up by a Timken bearing. The pits are of the regenerative type, each hole being capable of independent reversal and regulation. At present the fuel used is natural gas but provision is made for fuel oil and eventually producer gas. The gas regenerative chamber, being nearest to the pit proper and rather small in size, is roofed over. The natural gas enters this chamber at a low point and leaves it through a port in the roof, where it mixes with the hot air before entering the pit proper. There are no gas burners and combustion is found to be excellent.

To permit independent expansion and contraction, the operating floor around the pits is in no way connected to the brickwork or the binding of the pits, nor is it fastened to the main building columns. The advantages of this construction are evident. The entire installation was furnished by the S. R. Smythe Co., Pittsburgh. The main part of the pit building is spanned by a 5-ton Morgan vertical charging crane equipped with Timken bearings.



In the Section Below Are Shown the Regenerator Arrangement and the Flues



Plan and Cross Sections of a Soaking Pit Unit, of Which There Are Three

Blooming Mill

The blooming mill building is 100 ft. wide and 200 ft. long, with a 10-ft. wide lean-to. Both the pit and the mill buildings are provided with ample light and ventilation. The mill buildng forms an L with the soaking pit building, and the mill approach table extends into the pit building far enough to be within reach of the pit crane, thus doing away with the necessity for an ingot transfer device. The ingot is, however, not placed directly onto the table rollers, but on a heavy platform alongside of the table, whence a pusher moves it broadside onto the table. Breakage of table rollers caused by dropping of an ingot is thereby eliminated.

The blooming mill is a three-high stand with a fully inclosed pinion set, driven by a 1500-hp. Allis-Chalmers a.c. mill type motor through a 10 to 1 gear reduction and flywheel set. A Thomas coupling connects the motor to the gear set, the motor operating at 350 r.p.m. and the mill at 35 r.p.m. This speed is lower than usually employed but was found advisable, due to the nature of the steel to be rolled. The mill has electrically operated front and rear lifting tables with a fingered type of manipulator under the front table and adjustable, stationary guides on the rear table. The bloom is carried by a shear approach table to a vertical bloom shear capable of shearing a hot 10 x 10-in. bloom. Back of the shear is a shear depressing table, a kick-off and a set of cradles.

After being reduced to 8 x 9 in. or 7 x 8 in., the ingot is sheared into lengths of approximately 8 ft., a 4300-lb. ingot making two blooms, weighing about 2000 lb. each after cropping. The blooms, having been kicked off, are stamped with heat and specification number and transferred on standard gage cars to the billet and chipping yard. All tables, table drives and shear drive are provided with Timken bearings.

Unusual interest attaches to the bloom shear in that it has neither clutch nor fly wheel but is direct connected to the motor drive and operated by a master controller. The motor runs only when the shear moves, the shear making one cycle at a time only, a limit switch stopping the motion when the shear is in the "up" position. Advantages claimed for this shear over the standard type are greater cutting speed, less power requirement, less maintenance cost and elimination of breakage, since the motor will stall when too great a resistance is encountered.

Mill and all tables, the gear reduction set, shear, ingot pusher, kick-off and cradles were furnished by the

Annealing Furnaces Are Used for Normalizing Tubing That Requires More Than One Cold Drawing Operation. An interesting feature of these furnaces is that their charging cars are equipped with motor drive attached to the ends of the cars

Mackintosh-Hemphill Co., Pittsburgh. A 15-ton crane with 10-ton auxiliary hoist commands the blooming mill building. This crane, built by the Morgan Engineering Co., is equipped with Timken bearings. The sewer being higher in elevation than the mill sump, the water discharged by the mill is pumped up into the sewer. Two Weinman vertical pumps provided with automatic float control perform this duty.

Bar Mill

One building 100 ft. wide by 965 ft. long, with a 10-ft. wide lean-to, houses the bar mill, tube mill and merchant mill. After being pickled and chipped the blooms are carried, by overhead monorail and magnet, to a reheating furnace and charged through the furnace end by a pusher. This is a continuous oil or natural gas-fired furnace with a chamber 10 ft. wide and 80 ft. long. The blooms are discharged from the furnace through its side by another pusher and run over a short transfer table onto the mill table. The bar mill consists of four 22-in. three-high stands arranged side by side and has front and rear traveling tilting tables. It is driven by an 800-hp., a.c. Westinghouse motor through a rope drive, the motor operating at 250 r.p.m. and the mill at 60 r.p.m.

This mill produces round billets from 2 to 7 in. diameter for the tube mill and square billets in various sizes for the merchant mill. Some of the 8 x 9-in. blooms are rolled down to 2-in. square billets 140 ft. long. Reduction to billets of this length is made possible by use of swinging tables which form extensions to the tilting tables and are automatically carried along by them.

After being sawed into required lengths on a United Engineering & Foundry Co. hot saw equipped with Timken bearings, the billets are allowed to cool on a hot bed and re-chipped; they then are ready to be taken either to the tube mill or the merchant mill. The orig-

Tubes in the Smaller Sizes Are Reduced in Diameter on a 16-Stand Reducing Mill with Rolls Set at an Angle of 45 Deg. (in Rear). The hot saw and hot bed are in the foreground

inal plain type bearings in all the mill tables are being replaced by Timken bearings. The maximum output of this mill is 25 tons per hour.

Merchant Mill

Billets received from the 22-in. mill are charged by a pusher into a continuous heating furnace through its end, the furnace chamber being 17 ft. wide and having an effective length of 40 ft. The fuel is either natural gas or oil. Discharge is effected through the side of the furnace by means of pinch rollers and peel rod. Close to the furnace outlet is placed a 30-in. United Engineering & Foundry Co. sliding frame hot saw for cutting the billets into required lengths. The use of a hot saw in such a location is rather novel but it is stated that it has proved entirely satisfactory.

From the furnace the billet goes to a 16-in. three-high roughing stand built by the Lewis Foundry & Machine Co. This stand is driven by an 800-hp., d.c. variable speed Westinghouse motor operated at 410 to 720 r.p.m., a Fawcus 1 to 5 gear set with flywheels reducing the speed to 82 to 145 r.p.m. at the mill. A Fawcus flexible coupling connects the motor to the gear set. After being roughed down, the bar is reduced further in five 12-in. three-high stands set side by side, which are direct connected, through a Francke flexible coupling and a flywheel, to a 1200-hp., d.c. variable speed General Electric motor, operating at 150 to 250 r.p.m. There are also three 10-in. three-high stands driven directly by a 400-hp., d.c. variable speed General Electric motor, operating at 250 to 500 r.p.m.

Both 12-in. and 10-in. trains, which were furnished by the Wheeling Mold & Foundry Co., can deliver to a hot bed 120 ft. long, built by the Mackintosh-Hemphill Co. The bed consists of a belt-driven mill run-out table, a kick-off, an incline, moving fingers for spacing the bars, shuffle bars and a lower run-out table toward a Mesta shear. Here again is an interesting feature similar to the one in connection with the bloom shear, in that the kick-off, which extends the full length of the bed and may be represented by a straight edge hinged below the mill run-out table rollers, is coupled directly through the gearing to a motor. The motor therefore starts and stops with the kick-off, a limit switch insuring that the straight edge will stop clear of the rollers. One complete motion of the kick-off is accomplished in 1½ sec. but can be completed in less than one second.

Merchant mill product consists of 5/16 to 2⅛-in. round bars, or their equivalent in other standard shapes. This mill is equipped also for rolling automobile spring steel and all high-grade alloys, the bed allowing stacking of the spring flats for annealing. Coils of 300 lb. each can be produced in sections from ½ to 13/16 in. and smaller sizes in proportion to good mill practice. Two reelers made by the Wheeling Mold & Foundry Co. are provided for coiling. The maximum capacity of the merchant mill is 20 tons per hour. All tables and the entire hot bed are equipped with Timken bearings.

Wire Drawing Department

Coils as well as a certain amount of straight stock from the merchant mill go to the wire drawing department. There are two Morgan units, one consisting of three standard blocks and the other of a two-reel Morgan bull block. After pickling, the stock is washed by a stream of water pumped at 100 lb. pressure to insure the removal of all scale and dirt. Pointing is done on a 2¾-in. Dayton swaging machine. The coiled stock eventually is fabricated into rolls on heading machines in the bearing factory; the straight stock, into large rolls and small cones on automatic turning machines. Sizes are held to very close limits so as to require the least possible amount of machining or grinding in the subsequent operations.

Tube Mill

The tube rolling department has been materially enlarged, additional rolling equipment installed and manufacturing processes have been improved since the original mill was first started. The operations are as follows:

Rounds from 3½ to 7 in. diameter, as received from the 22-in. mill and chipped, are heated in a continuous 10 x 60 ft. furnace. A Mannesmann piercing mill, built by William Tod and having rollers 19 in. in diameter, converts the round into a rough tube of approximately the same diameter as the round and having a wall thickness of from ¼ to 1 9/16 in. The mill exerts a tremendous pressure on the revolving mandrel bar, which is taken up by a large Timken thrust bearing built into the so-called "thrust block." After piercing, the tubes are given an inspection and transferred to a two-high William Tod re-rolling mill, which has also a set of return rolls. This mill reduces the outside diameter and produces an even wall thickness by hot rolling over a cast steel alloy plug. The tubes have now a diameter of from 3¼ to 6¾ in. and a wall thickness of from 5/32 to 1⅛ in.

Sliding Frame Hot Saw Located at the Outlet of the Merchant Mill Heating Furnace for Cutting Billets to Length Before Rolling

From this point the flow of tubes is diverted into two separate channels, one leading to cold operations only, the other to further hot working. The larger tubes, from 4⅜ in. outside diameter up, are not reheated but go directly to the cold drawing department. The smaller tubes, from 3¼ to 4⅜ in. outside diameter, are not allowed to cool but are transferred by a high-speed conveyor to a continuous reducing mill consisting of 16 stands placed closly one behind the other.

Each stand has a pair of driven rolls, the axis of the rolls in stands Nos. 1, 3, 5, etc., lying at right angles to that in stands Nos. 2, 4, 6, etc. Instead of having these axes alternately horizontal and vertical, they form an angle of 45 deg. with the floor line, making the rolls more accessible and easier to change. The tube is given one pass through one or more, up to all sixteen stands, during which operation the walls are thickened and the diameters reduced. Because the tube fills these stands simultaneously and because it must not be stretched between stands, the roll diameters and speeds must be very carefully calculated. This mill, built by the Woodward Machine Co., now a subsidiary of the Mackintosh-Hemphill Co., is driven by a 350-hp. a.c. Westinghouse motor. The tubes are now hot sawed

and allowed to cool, care being taken to preserve straightness. The hot saw runs on Timken bearings.

Here the stream of tubes again divides, some going to the cold drawing department and the remainder to the turning department. Tubes going to the cold drawing department are first pointed on steam hammers, the point being about 9 in. long, and then pickled, there being five acid tubs, also lime, "dope" and wash tubs in the pickling department. The pickling is followed by washing, inspecting for outside defects and "doping" with a lubricating solution for cold drawing. There are three 100,000-lb. single draw benches and two 50,000-lb. double draw benches, all built by the Standard Engineering Co.

For normalizing tubing that requires more than one cold drawing pass, there are two gas-fired annealing furnaces, each accommodating a standard gage car on which the tubes are placed and with a motor drive attached to it for moving it into and out of the furnace. Tubes as they come from the cold draw benches are from ⅝ to 6½ in. outside diameter, with a wall thickness of from 3/32 to 1½ in. After they are straightened, in a 12-roll rough straightener or breakdown machine and various other roll and gag straighteners, the cold drawn tubes are cut off to length on special machines, given a final inspection, oiled and taken to storage racks.

Tubes going to the turning department are first pickled, then straightened on an Abramsen-Sutton straightener equipped with Timken bearings and cut off. Then they are taken to turning machines made by the Brightman Mfg. Co. These are high-speed lathes on which a roughing and a finishing cut are taken simultaneously on the outside of the tube, giving a smooth bright surface and accurate size, the tolerance being ±0.003 in. on the diameter. After turning, the tubes receive their final inspection and are oiled and placed on racks. Tubes that are given the above operation are known as hot finished tubes. A variety of auxiliary machines are used, including a Williams & White bulldozer for making automobile axle sleeves, and several hot strike presses on which cup or cone forgings are formed, these being too large to be made out of tubes.

Purchased power is brought into the plant at 22,000 volts, a fully-equipped substation transforming this current into voltages adapted to the needs of the plant. The maximum hourly consumption runs up to 18,000 kw. and the system is so well balanced that the power factor is unity. Full magnetic control is used almost universally through the plant. There is a boiler house of over 2000 hp. capacity but, with the exception of steam hammers, the steam is used for purposes other than furnishing power.

Ferrophosphorus from the Electric Furnace

Type of Furnace and the Raw Materials—Analysis of the Two Grades Produced

BY THEODORE SWANN*

DURING recent years there has been a material increase in the use of ferrophosphorus in the steel industry. It has been observed, when rolling sheets, that those made of Southern iron did not have to be rolled at as high a temperature as the others and, consequently, did not stick together. The reason was found to be the phosphorus content of Southern iron. It was therefore thought that an addition of phosphorus to sheet steel of other than Southern origin would give the same result as the use of Southern iron. At first, this addition was made by introducing phosphate rock in the blast furnace and reducing it together with the iron ore; but, because of the necessity for only small quantities of this grade of iron, the process was not satisfactory. The manufacture of ferrophosphorus was then introduced, so that additions might be made to the open-hearth furnace or ladle.

Ferrophosphorus was first manufactured in the blast furnace. This method, however, can economically produce a grade of product up to only about 20 per cent. To produce a higher grade, it would be necessary to charge a larger proportion of phosphate-bearing material; and as the rate of absorption by the iron is low, there would be an increased loss of phosphorus oxides. This feature makes the production of a higher grade ferrophosphorus in the blast furnace uneconomical. The use of high-grade ferrophosphorus in the steel requires a smaller addition and involves, besides the economies in handling, an additional economy in transportation. The alloy with a higher percentage than 20 per cent can be made only in the electric furnace.

In the ordinary operation of the electric furnace in the production of ferrophosphorus, an alloy may be produced containing 26 per cent phosphorus; this is the limit, for it does not seem possible to produce a higher phosphorus alloy even if large excesses of phosphatic materials are used. The reasons for the difficulty in raising this percentage of phosphorus are not known. The compounds Fe_3P, containing 15.6 per cent, and Fe_2P, containing 21.7 per cent phosphorus, have been studied and it appears as if the alloy produced, containing percentages of phosphorus within these limits, is a mixture of these two compounds. While some investigators have stated that as many as seven compounds of phosphorus and iron have been isolated, the compound Fe_4P_3, containing 29.33 per cent phosphorus, is the closest within the range produced by the electric furnace. It may be there is a compound Fe_3P_2; such a compound has, however, not been isolated and it may be that the alloy produced in the electric furnace, containing 25 per cent phosphorus, is a mixture of the compounds Fe_3P and Fe_4P_3, respectively.

Raw Materials

The raw materials used in the manufacture of ferrophosphorus consist of phosphate rock, coke, silica and iron scrap. The phosphate rock may be of the high grade commonly used in the manufacture of fertilizer, although a material containing higher percentages of silica than may be used in fertilizer manufacture has been found satisfactory. The excess of silica is not objectionable because it combines with the lime in the phosphate rock and is withdrawn with the slag, in reality reducing the amount of silica that would otherwise be added.

The principal source of phosphate rock is in the large deposits in Florida and Tennessee, but there are even larger deposits in other portions of the country. In the northern portion of Florida hard rock phosphate is found in tertiary formation; in the southern portion, around Tampa, there is the pebble phosphate, of more recent origin. Brown Tennessee phosphate rock, a residual deposit of highly phosphatic limestone, is found near Nashville, Tenn.

Iron borings or turnings are ordinarily used, but it is possible to use iron ore instead. When iron ore is substituted, additional coke and power are necessary, but this is largely compensated for by the fact that the source of iron is less expensive. When scrap becomes very expensive, other iron-bearing materials are used, such as pyrites cinder, mill cinder, iron ore, and a sin-

*President Federal Phosphorus Co., Birmingham, Ala. This paper was presented at the Birmingham meeting of the American Institute of Mining and Metallurgical Engineers in October.

tered mixture of pyrite cinder and low-grade phosphate rock. While extra power and coke are required to reduce the iron in these, the cost of the iron contained is less and the final costs can be balanced.

By varying the amount of iron charged, the phosphorus content of the ferrophosphorus may be varied. A certain amount of iron oxide tends to help reduce the volatilization when smelting. Coke braize for the electric furnaces at Anniston, Ala., is obtained from the Birmingham by-product coke ovens. Silica rock of high purity abounds in the mountains and streams close to the plant at Anniston.

Phosphorus could be extracted from the rock by heating it with coke or sand, but an inspection of the heat of the reactions involved shows that the reactions that use coke and sand together give the lowest temperature and the smallest heat of reaction. Part of the phosphorus liberated is absorbed by the iron, thus making ferrophosphorus.

The metal and the slag from the furnace are tapped together. From the tap hole, the products run into a large iron chill in which the metal remains; the slag floats and overflows into a bed of sand where it is chilled and broken up. The slag carries with it a certain amount of phosphorus, but the loss can be minimized by proper burdening. The ferrophosphorus, after cooling, is removed from the chill and broken in pieces for easy handling.

Type of Furnace Used

In the production of high-grade ferrophosphorus, a large excess of phosphorus must be charged and the losses by volatilization become very large. For this reason, a closed furnace is used, which permits drawing off the vapors of phosphorus through a gas main. By admitting air and moisture into these vapors, phosphorus pentoxide and then orthophosphoric acid is formed. The orthophosphoric acid is collected by condensation and electric precipitation with the Cottrell precipitator.

In the production of low-grade ferrophosphorus (17 to 19 per cent phosphorus) it is not necessary to use the inclosed type furnace and a rectangular smelting alloy type furnace is used. If the higher grade ferrophosphorus (containing 25 per cent phosphorus) is to be produced, it is necessary to use the inclosed type furnace in order that the evolved phosphorus fume may be collected. In the production of ferrophosphorus, the electric furnace operates at about a 94 per cent power factor and a 90 per cent load factor may be procured if care is taken.

The average electrode consumption for ferrophosphorus operation may be kept at 5 lb. per 1000 kwhr. input. In view of the fact that the furnace charge contains such a high percentage of carbon, it is not surprising that the electrode consumption is so very small.

Electric furnace ferrophosphorus is marketed in two grades; 17 to 19 per cent, average 18 per cent; 23 to 25 per cent, average 24 per cent. Complete analyses of the two grades are about as follows:

	18 Per Cent	24 Per Cent
Phosphorus	18.000	24.000
Silicon	0.500	0.750
Sulphur	0.005	0.005
Carbon	0.250	0.250
Iron	80.000	74.000
Miscellaneous	1.245	0.995
Total	100.000	100.000

The ferrophosphorus is sampled by breaking off a small piece from the large lumps of the cast. Samples of shipments consist of 200 or 300 small pieces broken from lumps as they are loaded into the cars. The preparation of the sample of 25 per cent ferrophosphorus requires more than ordinary care in that there is a tendency toward segregation in which one portion will analyze somewhat higher phosphorus content. This is one consideration in the statement that the 25 per cent ferrophosphorus may be a mixture of the two compounds previously mentioned.

PROSPERITY PREDICTED

President Ker Believes the Country Will Enjoy Good Business for at Least Two Years

YOUNGSTOWN, Dec. 2.—District steel companies continue to receive a substantial volume of new business. The Sharon Steel Hoop Co., which has been operating close to capacity for several weeks, is booking a large tonnage, according to President Severn P. Ker. "There has not been a day since Nov. 10 when our company has not booked at least 140 per cent of its full production capacity," he states. "On some days the bookings have run as high as 300 per cent, while the average has been in excess of double capacity."

Mr. Ker predicts prosperous conditions for the industry for at least two years. Several years ago he prophesied that by 1930 steel ingot and casting production would be 60,000,000 tons per year, or 10 per cent greater than the present theoretical maximum capacity. This prophecy Mr. Ker now repeats, also estimating that in 1930 the country will have a population of 120,000,000 people, with an average consumption of steel of 1000 lb. annually. He points to the growing uses of steel for fireproofing, metal furniture and filing cabinet construction, motor car manufacture, for residential and general construction and the expanding steel requirements of the railroads in support of his view that we may expect continued heavy consumption of steel products.

"If metal lath were used in only one of ten new buildings erected at this time the demand would equal the capacity of this branch of the fabricating industry," he states.

Leading independent sheet makers, such as the Republic Iron & Steel Co. and the Youngstown Sheet & Tube Co., have formally marked up quotations $2 to $3 per ton, in conformity with the action of the American Sheet & Tin Plate Co. The quotations on which forward business is being accepted are 2.75c. for blue annealed, 3.60c. for black and 4.75c. for galvanized and full finished sheets, all base gages.

However, much tonnage remains to be shipped at the old price levels from this territory.

Firm demand for merchant steel bars has strengthened the 2c. per lb. price, while plates are stabilized at 1.90c.

In this district No. 2 foundry iron is being held firmly at $20 and basic at $19.50.

Annual Meeting of British Cast Iron Research Association

In the unavoidable absence of Lord Weir, H. B. Weeks presided at the third annual meeting of the Cast Iron Research Association in London on Nov. 19. The chairman laid stress on the great progress made during the year and summarized the main developments, particularly the extended research program and the establishment of a laboratory.

Sir John Dewrance was elected president for the period 1924-26, and the following were elected vice-presidents: George Pate, Falkirk; Summers Hunter, Wallsend-on-Tyne; F. W. Firth, Sheffield; C. E. Lloyd, Dudley, and W. B. M. Jackson, Chesterfield. Commander C. W. Craven and Prof. T. Turner were re-elected vice-presidents for a further year. A great tribute was paid to the services rendered to the association by the retiring president, Lord Weir of Eastwood, who was elected an honorary member, and retiring vice-presidents M. Deacon, vice-admiral Sir George Goodwin, A. Laing, P. W. Petter and Douglas Vickers.

A. J. Burn, F. J. Cook, T. Donaldson, N. B. Ellington, J. Haigh, Major C. Howl and M. Riddell were re-elected to the council. Dr. W. Rosenhain and T. Turner were elected honorary members. Dr. Rosenhain suitably responded, expressing the hope that there would be even greater cooperation in the future between the association and the ferrous alloys research committee. Delegates nominated by the leading technical institutions were elected and thanks expressed to the professors and scientists who assist in the work of the association.

Vacation Plans for Wage Workers*

Valuable Information Obtained from a Large Number of Manufacturers in Twenty-six States and Canada— Various Methods Adopted

PROBABLY at no other time have American industrialists been so keenly in quest of personnel policies of proven value as incentives to increased production and stabilized forces. Never before in the development of the modern industrial relations program has there been a more searching demand for an analysis of the costs and other economic factors involved. Keen competition and mounting overhead expense are demanding of labor management a businesslike procedure. In this connection, therefore, it is of considerable interest to note the development of another industrial relations feature—vacations with pay for wage earners. Many enterprises are adopting various types of vacation plans, not merely as a reward for faithful service or as a health measure, but rather as good business policy. Not a few companies are discovering that vacations can be successfully worked out during the shutdown or inventory periods.

In this country, the adoption of vacation plans for wage earners has been confined to private enterprises, as there has been no legislation covering paid vacations except in governmental service, and but very few collective agreements. In Europe, however, conditions are quite different. In four countries there exists legislation granting all workers vacations with pay, while in England, Germany, Italy, Norway and Sweden, the number of collective agreements containing provisions covering annual paid "leaves" is large and constantly increasing.

In the spring of this year, the industrial relations staff of Curtis, Fosdick & Belknap received requests from some of the clients of that firm for information covering vacations for wage earners. A search of the files of various industrial and trade organizations revealed the fact that there were no comprehensive data available. A selected list of firms which were supposed to have plans, was compiled, but many of these firms were found to have plans for salaried workers only, when the purpose of the report was to cover only plans for factory workers, meaning hourly, day, or piece workers, and not salaried employees or clerical workers. As the result of questionnaires and plant visitations in the nature of original research, a special report was composed covering 93 companies, operating 163 plants, and employing more than 342,000 wage earners. (Cf. Table I.)

All vacation plans were divided into two general classifications: *regular plans*, granting vacations with no interruption in the continuity of production in the plants; and *shutdown plans*, granting vacations during shutdown or inventory periods. In turn, the regular plans were composed of two types: *straight or non-graded plans*, granting a standard vacation to all employees with a standard length of service, and *graded plans*, granting varying periods of vacations with varying lengths of service.

Manufacturers Heartily Indorse Vacations for Workers

From the president of a prominent automobile company:

We believe in the vacation plan thoroughly. As in all of our cooperative plans, labor turnover was decreased, loyalty and efficiency of labor was greater, the man hours per car produced were less, and the quality of the cars turned out was better.

From the president of a box and paper company:

The most satisfactory thing we do for our employees. Increases loyalty and efficiency and we are glad we maintained it during the depression period.

From a pipe and metal manufacturing company:

We consider the plan excellent in relation to production, turnover, and morale. Employers are very much enthused over the idea. It has done more to prove our real human consideration of our employees than almost any other of our industrial relations endeavors.

From a large rubber company, with eleven years' experience:

There is no doubt in our minds that we are receiving value received, this fact being attested to by the fact that in spite of a period of strenuous retrenchment, our vacation plan with minor changes is still in effect.

From a large metal manufacturing company:

The company benefits in the way of production in receiving the employees' energy upon their return from vacation. We believe the expense incurred by vacations is offset by far by the effect the vacation plan has on the morale of the organization.

From a company manufacturing paper, building and roofing products, which has recently adopted a vacation plan:

Our real basis for giving a plant vacation was the fact that we felt the plant workers were just as much entitled to a rest as most of the salaried workers. Our plant operates, and has for several years, very steadily, and we felt that these men and women were entitled to a vacation without the loss of pay.

Table I.—Scope of Report

Type of Plan	No. of Plans	Per Cent	No. of Plants	Per Cent	No. of Wage Earners	Per Cent
Regular — Straight or non-graded	29	31	56	34	126,166	37
Regular—Graded	33	36	72	44	180,988	53
Shutdown	31	33	35	22	34,900	10
Total	93	100	163	100	342,054	100

The geographical distribution of plans extended through 26 states and Canada, with the industrial states of New York, Massachusetts, New Jersey, Pennsylvania, and Illinois leading. In Table II, it will be seen that over 17 major industries were represented, the petroleum, chemical, food, and metal manufacturing industries predominating.

(*Continued on page* 1517)

*Compiled by Industrial Relations Staff, Curtis, Fosdick & Belknap, Attorneys, New York.

EXTRAS ON CONCRETE BARS

New List Issued by Leading Dealer Doing a National Business

One of the leading reinforcing bar dealers whose business is of national scope recently issued a list of standard extras to be added to base mill prices on concrete bars. The extras cover size, warehousing service (cutting, bundling and tagging), bending, fabricating spirals and engineering service. The extras have now been generally adopted by the reinforcing bar trade. The card also contains a list of standard sizes which were adopted by concrete bar dealers at the instance of the U. S. Department of Commerce. The extras are as follows:

Extras to be Added to Base Price

For Size

¾-in. and larger	no charge
⅝-in	10c. per 100 lb.
½-in.	20c. per 100 lb.
⅜-in.	40c. per 100 lb.
¼-in.	$1.00 per 100 lb.

For Warehousing Service, Cutting, Bundling and Tagging

Contracts for 18 tons or over	50c. per 100 lb.
Contracts involving less than 18 tons	65c. per 100 lb.

For Bending

Bending, other than stirrups and column lacings	40c. per 100 lb.
Bending stirrups and column lacings	$1.00 per 100 lb.
Minimum charge for bending on any shipment	$5.00

For Fabricating Spirals

Assembled spirals of ½-in. hot rolled wire rods	$1.45 per 100 lb.
Assembled spirals of 7/16-in. hot rolled wire rods	1.55 per 100 lb.
Assembled spirals of ⅜-in. hot rolled wire rods	1.65 per 100 lb.
Assembled spirals of 5/16-in. hot rolled wire rods	1.95 per 100 lb.
Assembled spirals of ¼-in. hot rolled wire rods	2.25 per 100 lb.
Cold drawn wire	.50 per 100 lb.
Spirals coiled to proper diameter but unassembled, deduct from extras for assembled spirals	.30 per 100 lb.

For Engineering Service

Preparing bar lists and bending details from plans where all sizes and lengths are shown	5c. per 100 lb.
Preparing placing plans from design made by others	15c. per 100 lb.
Preparing design of reinforced concrete work and placing plans	30c. per 100 lb.
Minimum engineering charge in connection with any order	$15.00

Standard Sizes for Concrete Bars

Size	Net Area in Sq. In.	Weight per Ft. in Lb.
¼-in. rounds	0.05	0.17
⅜-in. rounds	0.11	0.38
½-in. rounds	0.19	0.66
½-in. squares	0.25	0.86
⅝-in. rounds	0.30	1.05
¾-in. rounds	0.44	1.52
⅞-in. rounds	0.60	2.06
1-in. rounds	0.78	2.69
1-in. squares	1.00	3.43
1¼-in. squares	1.26	4.34
1¼-in. squares	1.56	5.35

Universal Tool and Cutter Grinder

A universal tool and cutter grinder designated as the No. 99, and which is similar but smaller than its No. 1 machine, has been placed on the market by the Wilmarth & Morman Co., Grand Rapids, Mich.

The machine may be equipped either for belt or motor drive and the belt-driven machine may be converted into a motor-driven unit simply by replacing the main head. Features of the machine include front and rear control of the longitudinal feed, and micrometer adjustment to the table that can be put into use at any angle of the table. All attachments are interchangeable with the company's No. 1 machine. Electrical controls are on the knee, below the table, and are directly in front of the operator.

Motor-Driven Universal Tool and Cutter Grinder. All controls are on the knee below the table and directly in front of the operator

The longitudinal movement of the table is 16 in., the vertical movement 8 in., and the transverse movement 8 in. The working surface of the table is 5½ by 32 in., and the maximum distance from spindle to table is 8 in. The centers swing work up to 10⅜ in. in diameter and 20 in. long. The universal attachment swings cutters 16 in. in diameter over the table and 24 in. in diameter over the sub-table. The internal grinding attachment grinds from 9/16 in. diameter up and 3 in. deep; from 1¼ in. diameter up, 5 in. deep. The gear cutter attachment capacity is from 1¾ in. to 8½ in. diameter. The capacity of the chuck is 4 in.

The height of the machine from center of spindle to the floor is 48 in. and the base is 22 in. square. The weight of the motor driven machine, with all attachments, is approximately 1100 lb. net.

Up-Set Forgings

More than the usual amount of interest in a trade publication attaches to a 32-page pamphlet just issued by the American Forge Co., 2621 South Hoyne Avenue, Chicago, by virtue of the detailed views incorporated, showing the character of the metal after being forged in this manner. Reproductions of etched specimens show the flow of the grain in the process of up-set forging, while a number of cases are illustrated where much metal has been saved by this method of forging, in comparison with the older methods of working from a solid bar. Many dimension sketches are given showing the kind of work which has been done in this way and indicating the closeness with which the forging may be made to approach the final machining process.

The special committee appointed at a recent meeting of iron and steel manufacturers of Pittsburgh and nearby districts to gather data and prepare a through rate proposal to Western points on iron and steel products, to meet conditions resulting from the abolishment of Pittsburgh as a sole price basing point in steel, expects to be ready to report on the rate proposal early in December.

The Warren Foundry & Pipe Co., Phillipsburg, N. J., has filed a record of the lease recently consummated with the Replogle Steel Co., at the Warren County clerk's office, the plant to be occupied by the leasing company until 1939. A record of a mortgage of $2,500,000, taken by the Empire Trust Co., New York, has been filed, also.

Geared-Head Universal Turret Lathe for Small Work

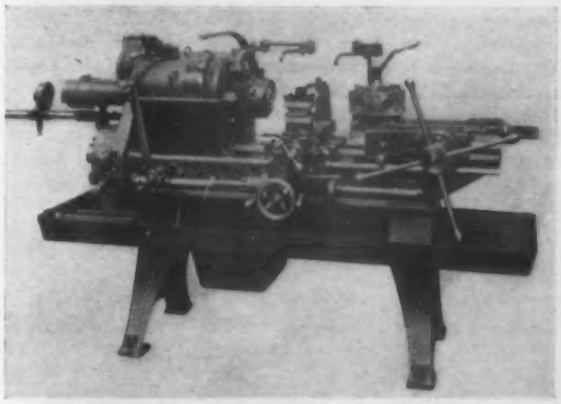
An "all-geared" model of its No. 4 universal turret lathe, developed to meet the need for a machine similar to the A-type turret lathes but for smaller work and with a ram type of turret, has been placed on the market by the Warner & Swasey Co., Cleveland.

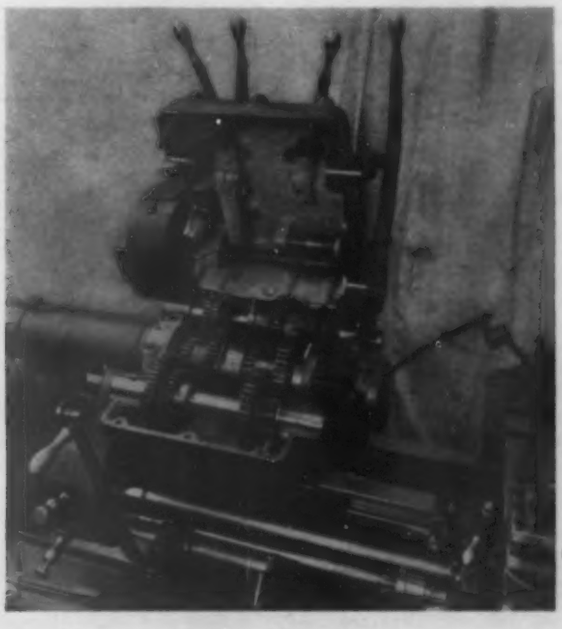
A feature of this small machine is the two tool-carrying units with independent power feeds, the same as on the larger machines. The standard cross slide has five cutter positions, four on the square turret and one on the rear tool post. Cutters in these positions often operate simultaneously with the tools on the hexagon turret, which has six tool positions.

The new all-geared head machine was designed for greater power and a wider range of speeds and it is claimed that more than twice as much power is delivered to the spindle as through the cone-type back-geared drive. Any one of 12 spindle speeds, forward and reverse, from 30 to 760 r.p.m. is available by moving convenient levers on the head. The hardened gears run in oil and provision is made for the convenient adjustment of the frictions. The geared-head is said to permit of pulling stellite cutters to their capacity and also to make possible the combining of a greater number of cutters to operate simultaneously.

Special attention is said to have been given to the motor drive arrangement. The motor may be mounted at the rear of the machine on the head-end leg, driving to the pulley by belt, or it may be mounted on the head. Among other advantages the use of the individual motor drive is emphasized as permitting of good lighting conditions for the operation of the machine. More than 75 standard small tools are carried in stock for the No. 4 universal machine, providing for a wide range of both bar and chucking work. These tools are said to increase the productive possibilities of the turret lathe for all classes of work, and reduce the cost of tooling.

The machine is claimed to be rapid in operation, easily handled and quickly tooled and to be suitable therefore for quantity production, and also for use in the jobbing shop and the tool room where only a very few pieces are made at one time. The tooling is adjusted easily from one job to another and the 12 spindle speeds are intended to provide surface speeds for economical cutting. The turret lathe may be employed for bar and chucking work, round bars up to 1⅛ in. in diameter being chucked through the automatic chuck. Ten inches is the maximum length which can be turned at any one setting of the turret saddle along the bed. For chucking work, a geared scroll chuck is provided to hold the piece. The maximum swing over the ways is 16 in. and over the carriage guides 14¼ in.





Geared-Head Universal Turret Lathe Designed for Greater Power and Wider Range of Feeds. A feature is the two tool-carrying units with independent power feeds. The arrangement of the gearing in the head may be noted from the view at the right

Accident Frequency Reduced

WASHINGTON, Dec. 1.—Steady decline in the accident frequency rates of a group of iron and steel plants, covering approximately 50 per cent of the industry, is shown in an extensive study by Lucien W. Chaney, of the Bureau of Labor Statistics, Department of Labor, published in the Monthly *Labor Review* for November. The study shows that the accident frequency in 1923 had been reduced to 12.8 per 1,000,000 hours of experience as against 60.3 in 1913. The plants covered were selected because they had been longest and most successfully engaged in accident prevention effort. For the industry as a whole, the average for the years 1910 to 1914 was 59.2, while the rate for 1923 was 33.2. A striking feature in the report is the extraordinary uniformity of the years 1922 and 1923. While nearly 100,000 more workers were employed in 1923, the frequency rates of the two years are almost identical and the severity rates exactly identical. Dr. Chaney says that it is evident from this that the impression given by the increased number of accidents in 1923 was not entirely warranted. He adds:

"In a number of cases where it has been possible to compute rates, it has been evident that the hazard was somewhat greater in 1923 than in 1922, but in no case has this excess been extreme. The situation disclosed in the iron and steel industry suggests very strongly the need, as a basis of judgment, of reliable accident rates rather than percentages of increase or decrease which may be wholly misleading."

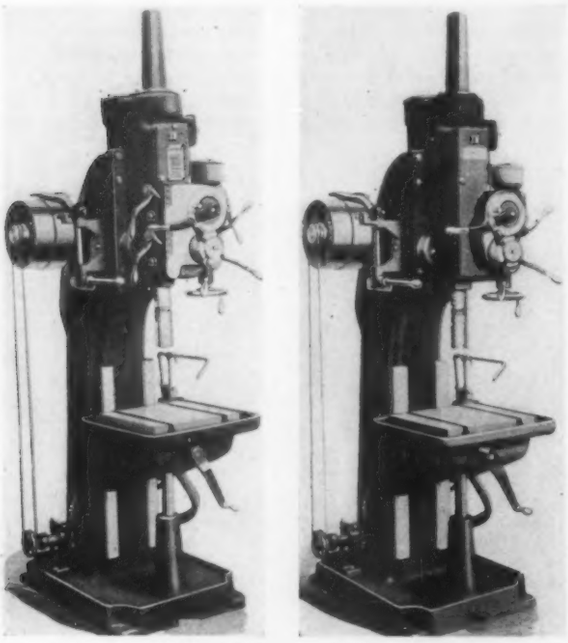
Civil service examinations are announced for valuation engineers for the income tax unit of the Treasury Department, at an entrance salary of $3,800, with advancement up to $5,000. Full information and application blanks may be obtained from the Civil Service Commission, Washington, or any post office or custom house.

More than $775,000 has been subscribed for a Y. M. C. A. building at South Chicago, Ill., thus assuring the erection of the structure. A donation of $375,000 had been received from the United States Steel Corporation on the condition that $250,000 additional would be raised locally.

New High-Duty Drilling Machines

Two new drilling machines of manufacturing and gear-box type, added recently to the line of the Foote-Burt Co., Cleveland, are shown in the accompanying illustration. The machines are designated as the Nos. 23 and 24 and have a capacity for drilling up to 1¼ in. and 2 in. holes respectively.

The manufacturing type machine is for use in drilling single pieces in large quantities. Only one speed and feed are provided, but gears may be provided to give a wide range of speeds and feeds to suit any given



The Gear-Box Type Machine Is at the Left and Manufacturing Unit at the Right. The machines may be equipped with direct-connected motor drive

operation. In the gear-box type machine, which is intended for miscellaneous work or for use where drills of different sizes are used, the feed and speed changes are obtained by means of sliding gears which are operated by levers at the front of the machine. The gears can be meshed while the machine is in operation. Three feeds from 0.006 to 0.026 in. per revolution and nine speeds from 75 to 610 r.p.m. are available.

The power feed has an adjustable automatic disk stop. The feed is applied to the spindle sleeve through double racks cut directly in the sleeve and pinions mounted on opposite sides. Hand feed is obtained through worm gearing, while a quick traverse of the spindle in either direction is actuated by a hand wheel at the front of the machine.

The construction of the head and upright are features emphasized. The head which is of the unit type, comprises the driving and feeding mechanism, and may be removed conveniently from the upright without disturbing other units of the machine. The upper part of the upright forms the U-section into which the head is mounted. It is bolted and dowelled to the front face of the upright and also bolted to rear sections. One pump-driven lubrication system supplies the complete head unit. The spindle and slow running shafts are bronze bushed but all others are equipped with roller or ball bearings. The machines illustrated are equipped with the regular belt drive but a direct connected motor drive can be furnished. Either a plain or compound table is available. The oil tank is cast directly into the base of the machine beneath the column, the base being made in the form of an oil pan for catching all drippings.

The weight of the gear-box type of the No. 23 machine is about 1875 lb., and of the manufacturing type, 1750 lb.

Horizontal Motor-Driven Tapping Machines

A line of horizontal motor-driven tapping machines, which includes plain, reverse spindle and multiple spindle units, has been brought out recently by Harvey Hubbell, Inc., Bridgeport.

The single spindle machine is shown in the accompanying illustration. It has a chuck capacity for taps up to 3/16 in. in diameter, and it is operated through friction cones. The motor is mounted on a rocking platform, under control of the foot-treadle, which operates the machine and also controls the electric switch. When pressure on the foot pedal is removed the motor stops automatically. The motor and the spindle are provided with double-thrust ball bearings. The capacity of the machine depends upon the class of work, but it is claimed that thin brass pieces can be tapped at the rate of 10,000 to 20,000 a day. The height of the machine is 38 in. overall, and the floor space occupied is 24 x 28 in. A ¼-hp. motor is employed and the spindle speed is 1800 r.p.m. The weight of the machine is 325 lb. crated.

The reverse spindle machine is equipped with a tapping fixture having two adjustable spindles and taps two holes from opposite sides simultaneously. The operation is the same as noted above. The capacity of this machine also depends on the class of work, and it is claimed that thin brass pieces can be tapped at the rate of 20,000 to 30,000 a day.

A similar machine with a multiple tapping fixture carrying three taps that are adjustable to varying

Horizontal Single Spindle Tapping Machine. The motor is mounted on a rocking platform, under control of the foot treadle

distances is also available. Small pieces to be tapped are inserted in a dial provided, and the three taps operate simultaneously, the piece dropping free from the dial as the last hole is tapped. The operation of the machine is the same as the single-spindle unit and thin brass pieces are said to be tapped at the rate of 30,000 to 40,000 holes a day.

The Bradley Transportation Co., Rogers, Mich., has placed a contract with the American Shipbuilding Co. for a self-unloading steamer which will be the largest vessel in its class. This vessel will be 586 ft. long over all. It will be built at the Lorain yard and will operate in the stone trade. This is the fourth large vessel that has been ordered from Lake shipyards for 1925 delivery.

The Interstate Commerce Commission has suspended from Dec. 1 to March 31 the operation of schedules proposing to increase the freight rates on wire and nails in straight carloads or in mixed carloads with various other steel products from New Orleans and related points to Eagle Pass, El Paso and Laredo, Tex., when for export to Mexico.

LITTLE LEGISLATION EXPECTED

Present Session of Congress Will Probably Pass Few Laws—Policy of Economy Proposed

WASHINGTON, Dec. 2.—Formal convening of the final session of Sixty-eighth Congress yesterday marked the opening of what is expected to be a session that will produce nothing beneficial to business. There still is talk that an effort may be made to get through legislation providing for a 25 per cent horizontal cut in taxes, but the idea apparently is not encouraged by the Administration or the majority of Republican leaders.

Instead of being a constructive session, it is more likely to be obstructive. The Administration evidently will be pleased if it can get its supply bills through before March 4. It realizes that the "lame ducks," such as Senator Magnus Johnson of Minnesota and others of his type who were repudiated at the November election will in all likelihood be a source of much difficulty and this crowd which refuses to play with either the Republican or Democratic side, although accepting favors and political preferment from them, will make up the "balance of power" during the short session. After that the new Congress, ostensibly with a Republican majority in both branches, will come into power. The Republican majority in the Senate, however, will be extremely slim based on the canvass made which takes into account those who may be considered "regular" under any and all circumstances. In the House the situation from the point of the Administration will be better. But this new Congress likely will not sit until December of next year for the present attitude of the Administration is against an extra session unless it should be made necessary by an emergency not now in sight.

Next Session Prospects

With the new session, though, it may be expected that the Administration will begin more aggressively upon a program of legislation that looks to economy and the interests of agriculture, business, labor, and the country in general. But for the present session, not much is likely to develop, although the Administration will urge enactment of laws, including agricultural legislation, at this time.

The Administration, through the message of President Coolidge, continues to urge economy. The 1926 budget message is an example. It shows a reduction of $59,225,931 from the 1925 total of $3,788,745,778. The total estimate for next year, $3,729,519,846, does not show a very great drop relatively as a total, but for the departments there are some sharp cuts, while necessarily there are some increases. Among the cuts are the estimates of $24,330,000 for the Shipping Board, a reduction of $6,014,000; $405,700,000 for the Veterans' Bureau, a reduction of $79,257,898; $267,785,596 for the Department of the Interior, a cut of $26,533,567; $289,783,978 for the Navy Department, a cut of $23,423,279; $338,551,230 for the War Department, a cut of $8,602,364; $163,847,741 for the Treasury Department, a cut of $16,810,359 and $22,741,514 for the Department of Commerce, a cut of $3,106,141. The heavier increases apply to the Department of Agriculture, with an increase of $62,045,564; Postoffice Department, an increase of $23,730,809 and the Department of Justice, an increase of $2,288,205.

Reduction of Secretary Hoover's Department

The net reduction of $3,106,041 for the Department of Commerce has created a great deal of interest. The most sweeping decrease was from $5,347,470 for the Bureau of Census, involving the omission of the appropriation for taking the census of agriculture. At the same time, there necessarily are increases. Among the latter is an increase from $278,136 to $315,861 for commercial attaches for the Bureau of Foreign and Domestic Commerce, and from $412,600 to $432,600 for promoting commerce in Europe and other areas. The estimate for the Bureau of Standards is cut from $1,781,120 to $1,750,410, involving reductions of $5060 for testing structural materials, $5000 for investigation of public utility standards, $4480 for investigation of optical glass and $8000 for rope investigation and an increase from $500,000 to $511,760 for salaries.

AFTERMATH OF PITTSBURGH PLUS

Report to Be Submitted to State Legislatures—Duluth Committee Acts

CHICAGO, Nov. 29.—At a meeting held at the Old Colony Club here today, the executive committee of the Associated States Opposed to Pittsburgh Plus agreed upon a report to be presented to the legislatures of the four States which contributed to the campaign against the Pittsburgh basing point practice. The report will not be released for publication until Jan. 20. In the meantime, the Associated States will continue to function as a going organization and its future course of action will be definitely decided when the report is made public. Among those present at the conference were Herman L. Ekern, attorney general, Wisconsin; Clifford L. Hilton, attorney general, Minnesota; Hon. B. F. Baker, Kewanee, Ill., chairman of the committee; Sen. Randolph Boyd, Galva, Ill.; Hon. Robert Scholes, Peoria, Ill.; Hon. J. E. McMackin, Salem, Ill.; W. E. McCollum, assistant secretary of the Associated States, and Frank Emerich, chairman of the publicity committee.

The Duluth Steel Base Committee, it was learned here today, convened at Duluth, Nov. 12, and adopted a resolution voicing the opinion that compliance with the order of the Federal Trade Commission in the Pittsburgh Plus case calls for the establishment of base prices at Duluth on a parity with those at Pittsburgh and Chicago, and that higher prices merely substitute unfair Chicago competition for an unfair Pittsburgh competition. The committee also took the position that there is no reason to doubt that the steel interest will establish a correct basis of prices at Duluth, thus indicating its disposition to await further developments. In this connection it is interesting to note that Duluth base prices on common wire products have recently been placed on a parity with Chicago district mill prices.

Missouri Pacific Trust Certificates Are Approved

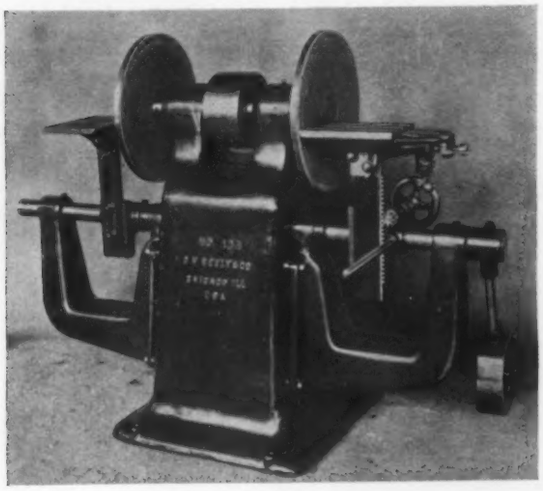
WASHINGTON, Dec. 2.—The Interstate Commerce Commission yesterday announced that it had granted authority to the Missouri Pacific Railroad Co. to issue equipment trust certificates to the value of $3,900,000 to be used in the purchase of equipment whose approximate cost will be $5,202,929. The equipment itself will consist of 1000 steel underframes and steel-superstructure automobile cars, 25 Mikado freight locomotives, 10 Pacific type passenger locomotives, 15 switching locomotives, 75 steel-centersill cabooses, two all-steel observation parlor cars, two all-steel dining cars, and two 150-ton steel steam wrecking derricks. The certificates are to be issued by the Bank of North America and Trust Co., and are to provide semi-annual dividends at the rate of 5 per cent per year to be dated Nov. 21, 1924, and are to mature in amounts of $260,000 on Nov. 1, in each of the years 1925 to 1939.

The Acme Steel Goods Co., Chicago, will soon install at its Riverdale, Ill., plant, a continuous hot band mill to roll bands from 6 to 12 in. in width. The building to house the new mill is half completed. The estimated output of the new unit will be 10,000 tons a month, which will be a little more than double the company's present capacity in bands.

Disk and Ring Wheel Grinders with Outboard Rockershaft Support

A ball-bearing disk and ring-wheel grinding machine equipped with outboard rockershaft support, as shown in the accompanying illustration, has been developed recently by Charles H. Besly & Co., 118 North Clinton Street, Chicago.

The outboard table supports at each side of the machine are separate units and are secured to machined pads at the ends of the base as shown. The top bearings of each support are bored to receive the rocker shaft. The inner bearing extends through a cored hole into the base and is faced on each side to receive thrust collars. The rocker-shafts may be oscillated or rigidly clamped in their bearings. They are 2½ in. in diameter and 24 in. long over the bearings, the latter being of the same diameter and 4⅜ in. long.



Ball-Bearing Disk and Ring Wheel Grinder. The table at the right is provided with hand feed arrangement. The tilting table at the left has no feeding motion

The arrangement of the work tables may be noted from the illustration. The right-hand table is provided with a hand feeding mechanism, and may be set along the rocker-shaft at any point between the bearings. The sliding motion or feed is controlled by means of a hand lever which actuates a rack and pinion mechanism. A micrometer stop is provided for gaging the work while grinding. The table is oscillated across the face of the disk wheel when in use, the rockershaft oscillating in its bearings at each end of the outboard support. The top of the table is 8 x 12 in. and T-slots are provided, as shown, for attaching fixtures.

The tilting table at the left-hand side of the machine is mounted on a stand which is clamped to the rockershaft. The vertical bar of this stand is adjustable vertically, and the table top is secured to the top of the bar by a central stud. The table top is 8 x 11 in. and may be tilted 45 deg. This table is used in a stationary position but may be adjusted along the rockershaft if desired.

The base of the machine is of box pattern. The top bearing housings are not split and are bored to receive the bearing bushing mountings. The spindle of the machine is of machinery steel and is 2 9/16 in. in diameter in the center and 26½ in. long overall. The spindle driving pulley is 10 in. in diameter. Double row radial ball bearings are employed and are mounted close to the outer end of the machine base housing to provide maximum support for the grinding wheel. The outer race of these bearings is mounted in separate flanged bushings which are fitted into the machine base housings. These units are secured to the base housings at each end with screws through the flange, the outer races are not locked in the endwise position. Thrust bearings of the self-alining type are mounted each side of a circular alining ring which is secured in the right-hand base housing. The thrust bearings have a sliding fit on the spindle and are held in place by a threaded adjusting collar on the spindle. The collar is provided with a locking device and is locked rigidly to the spindle after the adjustment is made. The wheel collars are of machinery steel and are 4½ in. in diameter and 1¾ in. wide. They are screwed up against a large shoulder on each end of the spindle, with right and left-hand threads, and are locked with taper pins.

On the machine illustrated herewith, which is designated as the No. 108, the company's new Titan spiral abrasive disk is employed. The diameter of the disk is 20 in.

Germany Working to Extend Its Trade with Other Nations

WASHINGTON, Dec. 2.—No pains are being spared by the German Government to assist German export trade in every particular and to improve the national foreign trade balance, according to a report received by the Department of Commerce from Trade Commissioner Miller, Berlin. The Government is aiding by increasing credits, cutting freight rates and communication charges, reducing onerous taxation, lowering the discount rate on foreign bills, negotiating new commercial treaties, reorganizing the consular and diplomatic services and establishing closer relations with German chambers of commerce in foreign countries. The gold discount bank, the report says, has reduced its rate to 8 per cent; the Ruhr Coal Syndicate dropped its prices on Oct. 1 by 10 per cent, and other steps have been taken to aid German foreign trade and to see that, with an increase in the purchase of foreign supplies which will accompany the granting of credits to German industry, the export trade keeps pace with imports and even exceeds them.

In this connection especial interest has been shown in consular advices to the department stating that upon invitation of the Mexican Government a visit of German industrialists, exporters, bankers, merchants, scientists and other persons interested in the development of the relations between Mexico and Germany has been arranged for by the Mexican Government. The Germans will leave Hamburg on Jan. 10. Special facilities for making the trip in comfort will be furnished by the Mexican Government.

Increasing Plant Operations

The Baltimore Tube Co., Baltimore, has adopted a production schedule of 65 to 70 per cent of capacity, with employment of regular working force, and expects to maintain this basis for a number of weeks.

The Lewistown Foundry & Machine Co., Lewistown, Pa., is running at full capacity with full working force, and is said to have orders ahead to insure this schedule for some time.

The Bessemer Gas Engine Co., Grove City, Pa., is giving employment to 960 men at its shops, the largest shop force ever engaged in the history of the plant. Machine shops, foundry and other departments are running full, and will maintain this schedule indefinitely.

The Sonora Phonograph Corporation, Saginaw, Mich., is developing a capacity schedule at its local talking machine manufacturing plant, giving employment to about 650 persons. A large portion of the output is devoted to radio equipment.

The Eastern Rolling Mill, Baltimore, is operating at about 60 per cent, and expects to hold to this schedule for a number of months.

The Phoenix Iron Works, Meadville, Pa., has resumed operations at its local plant, following a shutdown for a number of months. Employment is being given to more than 300 operatives. The company is said to be booking orders to insure continuous operation through the winter. The plant is under the direction of Samuel E. Duff, receiver.

Aluminum and Titanium as Deoxidizers

Comparative Effect on Acid Electric Steel Castings —Physical and Photomicrographic Results

BY GEORGE F. COMSTOCK*

SOME unusually careful and thorough tests were made recently at a well-known steel foundry to determine the relative values of aluminum and titanium as final deoxidizers and scavengers of steel. The work was confined to acid electric practice and the results were obtained from test bar coupons cast in the usual manner, and annealed at 1650 deg. Fahr., followed by cooling slowly in the furnace.

Fig. 1. — Large Group of Segregated Alumina Inclusions in Aluminum-Treated Steel from Heat A, Unetched and Magnified 200 Diameters

How the Tests Were Made

To get an accurate comparison between the two final deoxidizers, the heats made for this experiment were split after the usual silicon and manganese additions, by pouring from the first ladle, in which thorough mixing was accomplished, into two shank ladles. The steel in one of the latter was treated with 4 lb. of ferro-carbon-titanium per ton, while that in the other was treated with 1¼ lb. of aluminum per ton. The samples were all annealed and tested in the same way without the operator knowing their identity until the results had been reported.

The test specimens were machined with threaded ends to fit spherical-seated holders in the testing machine and an extensometer, reading directly to 0.0002 in., was used to obtain data from which a stress strain curve was plotted for each bar. The load increments applied in this process were 500 lb. The proportional limit was read from the plotted curve, and the yield point was taken as the stress at which an extension of 0.01 in. was noted. This corresponded in every case with the "drop of the beam," and agrees with what is commonly reported as the "elastic limit." The bars were all of standard dimensions except the titanium-treated sample from heat C, which was of standard (2 in.) gage length, but 14 per cent smaller than the others in cross section. The results of the tests are given in the table.

The average results are all in favor of the titanium-treated steel. Comparing the individual results in each heat, it is seen that the titanium-treated steel showed higher proportional limit and yield point than the aluminum-treated steel in three out of the five heats; the titanium-treated steel was better in tensile strength and elongation in four out of five heats, the exception in regard to elongation being the heat in which the titanium-treated test bar was machined too thin; and the titanium-treated steel showed better reduction of area than the aluminum-treated in every heat without exception. Since accidental differences between heats were eliminated from this comparison by dividing each heat into a titanium-treated and an aluminum-treated portion, it may safely be concluded from this test that steel treated with titanium gives better tensile results, especially in ductility, than steel treated with aluminum.

Some additional tests, using both aluminum and titanium in the steel, were made in connection with those reported above, but the results obtained were unfavorable. The physical properties of the steel treated in this way, in two heats, were inferior to those shown by the same steel treated with only one of these elements, so that apparently it is not good practice to add aluminum to titanium-treated steel.

Table of Physical Tests of Electric Steels Treated with Aluminum and Titanium

Heat	No. of Tests Averaged	Proportional Limit, Lb. per Sq. In.	Yield Point, Lb. per Sq. In.	Tensile Strength, Lb. per Sq. In.	Elongation, Per Cent	Reduction of Area, Per Cent
Aluminum Treated						
A	2	20,000	36,000	69,100	21.7	24.1
B	2	31,200	50,700	87,800	16.0	16.8
C	1	30,000	42,000	70,500	29.0	36.2
D	1	25,000	35,000	80,000	21.0	23.8
E	1	30,000	44,500	78,200	24.0	31.3
Aver. of	5 heats	27,200	41,600	77,100	22.3	26.5
Titanium Treated						
A	2	23,700	38,500	72,700	30.0	45.4
B	2	27,500	45,200	82,000	25.0	37.1
C	1	32,000	41,800	77,600	26.0	53.5
D	1	27,500	36,000	81,500	25.0	37.4
E	1	30,000	49,000	80,300	28.0	39.7
Aver. of	5 heats	28,100	42,100	78,800	26.8	42.6

In two other heats made at the same foundry for this experiment and treated as described above the titanium-treated bars showed blowholes and were not finished in machining, while the aluminum-treated bars seemed to be sound. It was admitted that these heats had not been properly killed in the furnace and probably more ferro-carbon-titanium than 4 lb. per ton was required for such steel. Four pounds of this alloy contained only about 11 oz. of metallic titanium, while the 1¼ lb. addition of aluminum which was used per

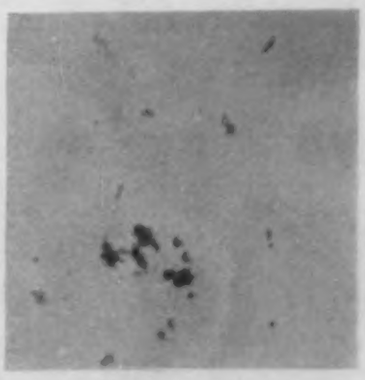
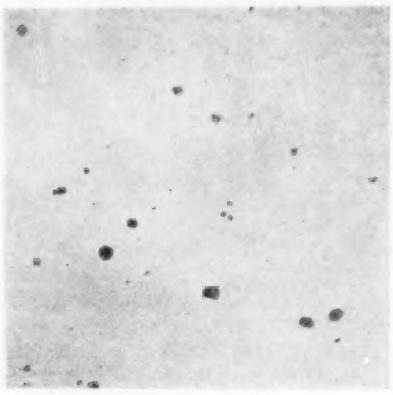
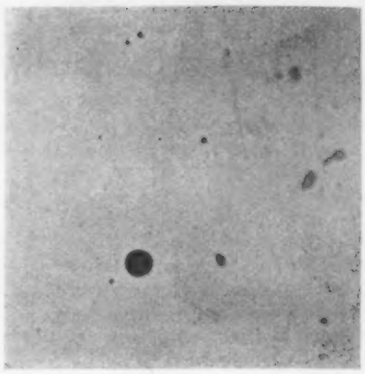


Fig. 2. — Small Group of Dark Alumina Inclusions, and Light Gray Sulphides in Aluminum-Treated Steel from Heat E, Unetched and Magnified 200 Diameters

*Metallurgical Engineer, Titanium Alloy Mfg. Co., Niagara Falls, N. Y





Figs. 3 and 4.—Typical Dark Slag Inclusions and Light Gray Sulphides in Titanium-Treated Steel from Heats B and D, Unetched and Magnified 200 Diameters

ton of steel contained at least 19 oz. of metallic aluminum and therefore might be expected to have a stronger killing effect.

The unsoundness of this improperly killed steel does not necessarily indicate that titanium is an inefficient deoxidizer, but shows that, under certain abnormal conditions, 4 lb. of this alloy per ton of steel is not a large enough addition. There should be no trouble, however, in controlling the furnace practice so that with the normal manganese and silicon additions effectively made, 4 lb. of ferro-carbon-titanium as a final scavenger would be sufficient. It must simply be remembered that the small titanium addition generally used is not a cure for unskillful refining in the furnace.

Photomicrographic Investigation

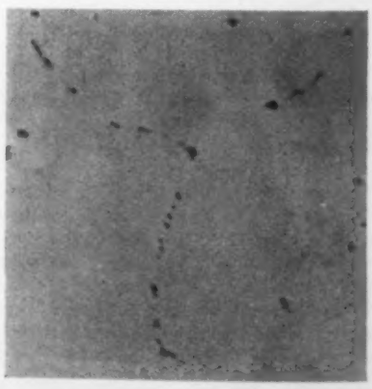
The 14 test bars whose results are tabulated were submitted to a metallographic examination to see if an explanation could be found for the superior ductility of the titanium-treated steel. A cross section of one stub from each bar was cut at the shoulder and polished in the usual way. The polished sections were examined before etching to inspect the non-metallic inclusions. All the specimens treated with aluminum showed alumina inclusions and hardly any silicates or slag. In the specimens from heats A and B there were badly segregated groups of alumina, as illustrated in Fig. 1; in the other heats the alumina found was scattered or in smaller groups as in Fig. 2. The large groups undoubtedly have a bad influence on the physical properties but, when scattered, the alumina probably does no harm. The titanium-treated specimens showed either no alumina or mere traces of it, but slag or silicate inclusions were more or less numerous in them. While not distributed with absolute uniformity, these inclusions were in no case closely grouped like the alumina. Figs. 3 and 4 illustrate typical examples of them, the slag being represented by the darker spots.

Sulphide inclusions were of course present in all these samples, as indicated by the light gray spots in Figs. 2, 3 and 4. There was a consistent and striking difference in their form and distribution between the aluminum-treated and the titanium-treated steels. In the former they were in finer particles and arranged in curved streaks, as illustrated by Figs. 5 and 6, while in the latter they were more globular and irregularly scattered as in Figs. 3 and 4.

This difference in arrangement of sulphides has an important effect on the physical properties, for the streaky arrangement causes cracks to open up on the surface of a test specimen during the latter part of a tensile test. The specimen then does not show good ductility, although the elastic properties may not be affected at all and the ultimate strength only a little. It was noticed in testing many of these aluminum-treated samples that the bars showed surface cracks after testing and it has been our general experience that, whenever such cracks are developed in testing cast steel, the sulphides are found to be arranged in streaks. It has also been found that the streaky arrangement of the sulphides is most prevalent in cast steel which has been treated with aluminum. The inferior ductility of the aluminum-treated samples in this report was undoubtedly due chiefly to the poor arrangement of the sulphides.

Such inclusions as are illustrated in Figs. 5 and 6 have been noticed by other investigators and have been variously described as slag, oxides, etc. The fact is, however, that such fine light-gray inclusions, arranged in groups and curved streaks, are practically always sulphides which for some reason have assumed this peculiar form instead of the normal mode of occurrence in scattered globules. Methods for making this identification have been published (see Transactions Am. Inst. Min. and Met. Eng., Vol. 56, 1916, p. 553, and Proceedings Am. Soc. Test. Mat., Vol. 23, Part 1, 1923, p. 521), so that any metallographist can check up this statement.

It remains to explain why this structure is found in steels treated with aluminum and not in steel treated



Figs. 5 and 6.—Curved Streaks of Fine Sulphide Inclusions, with a Few Particles of Alumina, in Aluminum-Treated Steel from Heats A and C, Unetched and Magnified 200 Diameters

with titanium. This explanation is largely a matter of opinion and theory, but it might be suggested that it seems to be connected with the solubility of these inclusions in the steel. Other investigators (see Arnold and Bolsover, Journal Iron and Steel Institute, 1914, No. 1, p. 396, and "Supplementary Notes on the Forms in Which Sulphides May Exist in Steel Ingots," presented by same authors at 1915 annual meeting) have also noted that aluminum reduces the size of the sulphide inclusions in steel and it would seem most probable that the presence of aluminum caused the sulphides to be retained in solution in the metal until it reached a lower temperature so that, when they were finally rejected, the steel had lost its mobility and they were unable to coalesce.

It may be that in the titanium-treated steel the sulphides began to come out of solution during the teeming, or even before, and the subsequent agitation of the metal in entering the mold caused these inclusions to become scattered and "balled up" in the usual globular form. If the aluminum caused the sulphides to be retained in solution until the metal had come to rest in the mold and began to solidify, it would naturally be expected that they would be more finely divided and arranged in streaks along the boundaries of the original austenite grains. This explanation is presented by the author merely as an interesting theory, which seems plausible but is not proved.

Before leaving the subject of non-metallic inclusions it might be noted that the samples treated with both aluminum and titanium, which showed inferior physical properties, had the streaky arrangement of the sulphides unusually well developed and also contained large groups of segregated alumina. It is hard to understand why these samples should have shown more alumina than most of the samples that were treated with aluminum only, since less aluminum rather than more should have been oxidized in the former, other conditions being the same. This may have been merely a chance occurrence; or perhaps what we have been in the habit of calling "alumina" in steel may be actually small pellets of aluminum, coated with a sub-microscopic film or alumina which prevented their coalescence with each other or their solution in the surrounding steel. More aluminum might naturally be expected in steel deoxidized with both titanium and aluminum than in steel deoxidized with aluminum alone; and the great difficulty of avoiding pitting of these spots in polishing would also be expected if metallic aluminum were present; but, on the other hand, this conjecture would not explain why the typical "alumina" inclusions in rolled steel are not elongated by the mechanical work.

To return to the facts discovered in the microscopic examination of the samples forming the subject of this paper: The polished sections were etched with picric acid to develop their microstructures and the structures of some of the titanium-treated samples were found to be somewhat better than those of the others. One of the titanium-treated specimens of heat A showed traces of the original cast structure and this was also true to a lesser degree of the specimens from heats C and D in which the aluminum-treated and titanium-treated steels had similar structures. The structures of the bars from heats B and E are illustrated in Figs. 7 to 10, inclusive, and in the former at least the influence of the curved streaks of fine sulphides in causing the formation of ferrite bands is prominently shown. This was typical of all the aluminum-treated samples from heats A and B which showed so much alumina. Heat E had a rather coarse structure and evidently had been annealed at a higher temperature than heat B. The titanium-treated bar in it showed a finer structure than the other and this has often been found to be the case in comparative tests of titanium-treated and untreated open-hearth steel castings annealed in the same way.

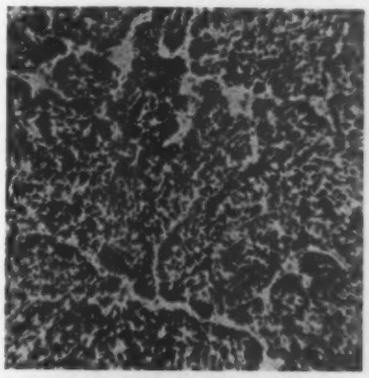


Fig. 7 (Left) — Typical Microstructure of Aluminum-Treated Steel from Heat B, Etched with Picric Acid and Magnified 50 Dia., Showing Curved Bands of Ferrite and Some Rather Coarse Pearlite Grains

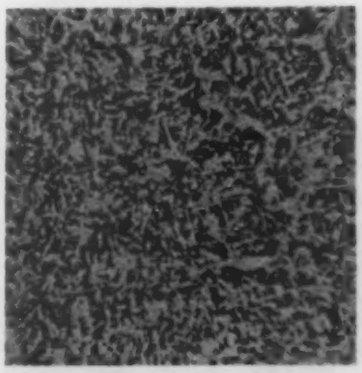


Fig. 8 (Right) — Typical Microstructure of Titanium-Treated Steel from Heat B, Etched and Magnified Like Fig. 7, Showing Fine Pearlite Uniformly Distributed

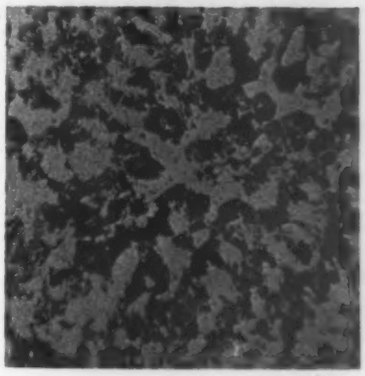


Fig. 9 (Left) — Typical Microstructure of Aluminum-Treated Steel from Heat E, Etched with Picric Acid and Magnified 50 Dia., Showing Coarse Pearlite Grains Arranged in a Dendritic Pattern

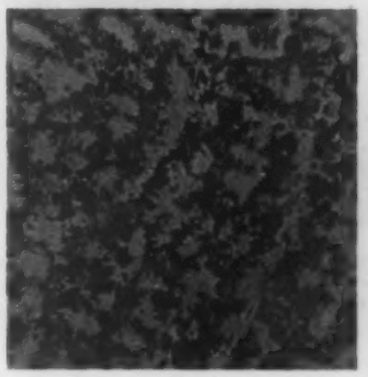


Fig. 10 (Right) — Typical Microstructure of Titanium-Treated Steel from Heat E, Etched and Magnified Like Fig. 9, Showing Finer Pearlite with a Less Distinct Dendritic Pattern

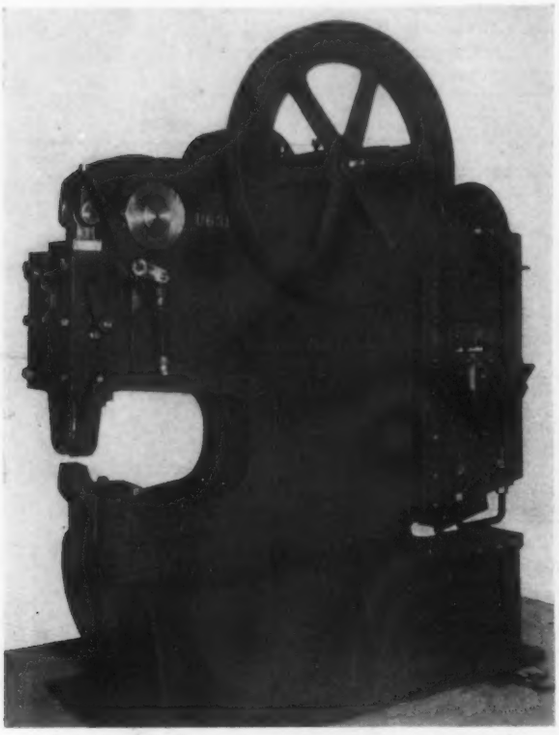
Summary

Summarizing the facts brought out by this investigation, it has been shown that with acid electric steel heats, divided so as to eliminate the effect of accidental differences in composition or quality, the portions treated with titanium gave superior results in tensile tests, especially in ductility, as compared with similar portions treated with aluminum. The latter steel was found to contain inclusions of alumina, more or less segregated in groups, while the former contained slag inclusions which were in no case thickly segregated. The chief factor affecting the physical properties of the aluminum-treated steel was found to be the arrangement of the sulphide inclusions in curved streaks, which caused the tensile test specimens to crack before good ductility was shown. In the titanium-treated steel the sulphides were scattered irregularly in isolated globules and the microstructure was finer and more uniform.

New Combination Punch and Shear

The punching and shearing machine illustrated herewith, which is a recent addition to the line of the Long & Allstatter Co., Hamilton, Ohio, is intended for general use. It may be employed to punch holes in plates, angles, structural sections and other material, and to shear angles, square or mitered, rounds, squares and flats, and to split plates. These operations may be done without changing tools, the punching tools and various blades being always set up and ready for use.

The main frame of the machine is an annealed steel casting, well proportioned with ample reserve strength



General Utility Combination Punch and Shear. Machines for punching from ¾ in. holes through ¾ in. material to 1½ in. holes through 1 in. stock are available

to withstand severe uses. The shear slide is of steel and operates in bronze liners. The punch slide is equipped with a lowering device which permits the operator to gage more closely the punch with the work. The blades, which are of tool steel, have four cutting edges. They are of plain shapes, which permits of low cost of renewals, and may be changed quickly. The gearing is of steel with machine cut teeth and all shaft bearings are bronze bushed.

The machine is available in sizes with capacity for punching ¾ in. round holes through ¾ in. material, to 1½ in. holes through 1 in. material, with the shearing capacities in proportion.

Firebrick in the Vesture of Art

The artistic sense of the Italian mind never has had a finer expression on a commercial theme than is found in a booklet recently published by Societa Anonima G. Verzocchi, Milan, Italy, maker of the V & D firebrick. These refractories are the product of the company's plant at Newcastle-on-Tyne, England, but the business is conducted from Italy's famous commercial center. To write adequately of the effort represented in this "catalogue," as Managing Director Giuseppe Verzocchi modestly terms it, one would need to call the roll of an imposing list of Italian artists who have made contributions in etching, water color and pastel to what is probably the most striking trade publication of a generation. The managing director appeals to his British friends for an appreciation of his effort to exalt a British product and "to give an artistic vesture to an industrial article which is undoubtedly 'most refractory' to art." Summarized, it is an album of art practically without words but, by means of illustrations, emphasizes for the consumer in compelling pictures the fire resisting power and mechanical strength of the firebrick and gives new impressions of conditions of brick manufacture, the shapes and sizes commonly in use and the scope of application in the industries. Presumably a copy of the volume, which is 7 x 10 in. in size, may be obtained by firebrick users by applying to the company.

Production of Connellsville Coal and Coke Increasing

UNIONTOWN, PA., Dec. 1.—Increased production of coal and coke in the Connellsville region, while pronounced since the election, has not been spectacular. There is every indication that the increase will be sustained and announcements of the blowing in of additional furnaces give assurances of further increases in output. The major part of the increase in production up to a week ago was made by the Steel Corporation through the H. C. Frick Coke Co. During the past ten days, however, considerable activity is noted in independent operations. The Frick company has fired approximately 1000 ovens since the election at its various plants and is now operating at 55 per cent of capacity. Operations are six days a week.

The Oliver Snyder Steel Co. added 200 ovens to its active list at Oliver No. 2 last week; the Bourne-Fuller Coke Co., with plant at Searights, added 150 ovens, bringing a total of 300 out of 378 ovens at the plant in operation; the Snowdon Coke Co. has all of its ovens active at Lynn; the Republic Iron & Steel Co. has its big Republic plants on a substantially increased production.

Production figures for the week ended Nov. 22 show a total of 99,040 tons, divided 61,040 tons at merchant plants and 38,000 tons at furnace plants. This total is compared with 184,950 tons for the same week of 1923. Total production for 1924 in the region is 5,803,850 tons as compared with 12,204,150 for the same period in 1923.

Rapid Furnace Relining in Canada

The largest and most modern blast furnace of the Dominion Iron & Steel Co., Ltd., was recently relined in two and one-half months, an achievement which Chief Engineer A. Theuerkauf regards as comparing favorably with the best records obtained on similar work in Canada or in the United States.

The furnace has a hearth diameter of 17 ft. with a bosh diameter of 21 ft. 6 in. Total vertical height from hearth level to top of furnace platform is 89 ft. Its rated production capacity is 450 gross tons of pig iron per 24 hr. The major accessory equipment in connection with this furnace, all of which had to be overhauled and repaired, includes six hot blast stoves with gas and air piping, water piping system, stock and scrap bins, cast house and stove shelter, skip car equipment, etc. A new skip hoist engine and house for it was included in the relining program.

On previous furnace relining jobs the average number of bricks laid per man per 10-hr. day was 500 (standard size equivalent) but in the above case this figure was increased to 870 in spite of time lost in setting cooling plates, bosh bands, abrasion plates, etc.

Exports from the United States in American vessels have been a larger proportion of the total in the first nine months of 1924 than was the case last year. In the current year American ships carried 38.60 per cent of all outgoing exports which went by water, compared with 37.78 per cent last year. With imports the increase is still greater, for American ships carried 33.32 per cent this year compared with 31.26 per cent last year.

ACTIVE LIST INCREASES

Net Gain of Nine Blast Furnaces in November in the Pittsburgh District

PITTSBURGH, Dec. 2.—The upward trend in blast furnace activity in the Pittsburgh and nearby district, which began to develop in July and which has continued since, was decidedly marked in November, when a net gain of nine in the number of stacks in production was recorded. As of Dec. 1, there were 82 furnaces in production out of a total of 139, as against 73 at the beginning of November, while at the low point of the midsummer period, there were only 57 furnaces making pig iron, ferromanganese and spiegeleisen. No less than six furnaces have resumed in the Mahoning and Shenango Valley districts in the past month and all those producing a month ago are still active. There has been a net gain of two furnaces in the Pittsburgh district proper and of one furnace in the Wheeling district. In western Pennsylvania, the same number is operating as one month ago. The Jones & Laughlin Steel Corporation, which now has 9 of its 12 furnaces in production, is planning to add another stack shortly and expects to have 11 furnaces going by the end of the year. Additional units of the Carnegie Steel Co. are also expected to go on in the next few weeks and two merchant furnaces, one at Sharon, Pa., and the other at Leetonia, Ohio, will go in around Jan. 1, according to present calculations. A further advance in pig iron to about $23, it is believed, would bring in one or both of the Josephine, Pa., furnaces of the McKinney Steel Co. Starting up of the second stack of the Donora, Pa., works of the American Steel & Wire Co. is expected shortly.

The record of the furnaces in and out of production as of Dec. 1 compares with that of Nov. 3, last, as follows:

Wheeling District

STEEL WORKS FURNACES

	Dec. 1 Total	Dec. 1 In	Dec. 1 Out	Nov. 3 In	Nov. 3 Out
Carnegie Steel Co.					
Bellaire, Ohio	2	1	1	1	1
Mingo, Ohio	4	2	2	1	3
Steubenville, Ohio	1	0	1	0	1
National Tube Co.	2	1	1	1	1
Wheeling Steel Corporation	4	3	1	3	1
Weirton Steel Co.	1	1	0	1	0
Total	14	8	6	7	7
Grand Total	139	82	57	73	66

Pittsburgh District

STEEL WORKS FURNACES

	Dec. 1 Total	Dec. 1 In	Dec. 1 Out	Nov. 3 In	Nov. 3 Out
American Steel & Wire Co.					
Donora	2	1	1	1	1
Shoenberger	2	0	2	0	2
Carnegie Steel Co.					
Carrie	7	7	0	7	0
Clairton	3	2	1	2	1
Duquesne	6	4	2	4	2
Edgar Thomson	11	7	4	6	5
Edith	1	0	1	0	1
Isabella	3	1	2	0	3
Lucy	2	2	0	2	0
Neville	1	0	1	1	0
Jones & Laughlin Steel Corporation					
Aliquippa	5	4	1	4	1
Eliza	6	5	1	4	2
Soho	1	0	1	0	1
National Tube Co.	4	3	1	3	1
Pittsburgh Crucible Steel Co.	2	1	1	1	1
Pittsburgh Steel Co.	2	1	1	1	1
MERCHANT FURNACES					
Clinton Iron & Steel Co.	1	1	0	1	0
Total	59	29	20	37	22

Mahoning & Shenango Valley Districts

STEEL WORKS FURNACES

	Dec. 1 Total	Dec. 1 In	Dec. 1 Out	Nov. 3 In	Nov. 3 Out
Carnegie Steel Co.					
Farrell	3	2	1	1	2
New Castle	4	2	2	2	2
Niles	1	0	1	0	1
Ohio	6	5	1	5	1
Sharon	1	0	1	0	1
Republic Iron & Steel Co.	7	4	3	2	5
Sharon Steel Hoop Co.	1	1	0	1	0
Trumbull-Cliffs Furnace Co.	1	1	0	1	0
Youngstown Sheet & Tube Co.	9	6	3	4	5
MERCHANT FURNACES					
A. M. Byers Co.	1	1	0	1	0
Hanna Furnace Co.					
West Middlesex	1	0	1	0	1
Leetonia, Ohio	1	0	1	0	1
Dover, Ohio	1	1	0	1	0
Reliance Coke & Furnace Co.					
West Middlesex	1	0	1	0	1
Sharpsville, Pa.	1	1	0	1	0
McKeefrey Iron Co.	1	0	1	0	1
Sharpsville Furnace Co.	1	1	0	1	0
Shenango Furnace Co.	2	2	0	1	1
Struthers Furnace Co.	1	0	1	0	1
Stewart Furnace Co.	1	0	1	0	1
Valley Mold & Iron Corp.	1	0	1	0	1
Total	46	27	19	21	25

Western Pennsylvania

STEEL WORKS FURNACES

	Dec. 1 Total	Dec. 1 In	Dec. 1 Out	Nov. 3 In	Nov. 3 Out
Bethlehem Steel Co., Johnstown, Pa.	11	6	5	6	5
MERCHANT FURNACES					
Adrian Furnace Co.	1	0	1	0	1
American Manganese Mfg. Co.	2	0	2	0	2
Kittanning Iron & Steel Mfg. Co.	1	0	1	0	1
McKinney Steel Co.					
Scottdale, Pa.	1	1	0	1	0
Josephine, Pa.	2	0	2	0	2
Perry Furnace Co.	1	1	0	1	0
Punxsutawney Furnace Co.	1	0	1	0	1
Total	20	6	12	8	12

To Discuss Production Control and Industrial Psychology

Twelve papers on various phases of management will be discussed at the meeting of the Taylor Society, to be held in the Engineering Societies Building, New York, Dec. 4, 5 and 6.

There will be eight sessions, two of which will be held jointly with the management division of the American Society of Mechanical Engineers Dec. 4. The papers at these sessions will include: "Re-presentation of F. W. Taylor's Paper on Shop Management," by Morris L. Cooke, consulting engineer, Philadelphia; "Production Control," by George D. Babcock, Holt Mfg. Co., Peoria, Ill.; and "Design, Manufacture and Production Control of a Standard Machine," by R. E. Flanders, manager Jones & Lamson Machine Co., Springfield, Mass.

Two sessions will be devoted to papers of interest to teachers of management and sessions on the visualization of management control will be held Dec. 5. The papers include: "Need, Origin and Nature of Visual Control," by John H. Williams, consulting engineer, New York; "Papers and Slides: the Mechanism of Visual Control," by C. L. Barnum, consulting engineer, Pleasantville, N. Y., and "Papers and Slides: Cases and Examples of Visual Control," also by C. L. Barnum.

W. V. Bingham, Personal Research Federation, New York, will present a paper on "What Industrial Psychology Asks of Management," at a session devoted to industrial psychology, another paper at this session being under the title of "The Bases of Industrial Psychology."

A paper on market analysis will be presented Dec. 6 by A. Livingston, manager of research, McKinney, Marsh & Cushing, Detroit.

M. F. Tighe Still Heads the Amalgamated Association

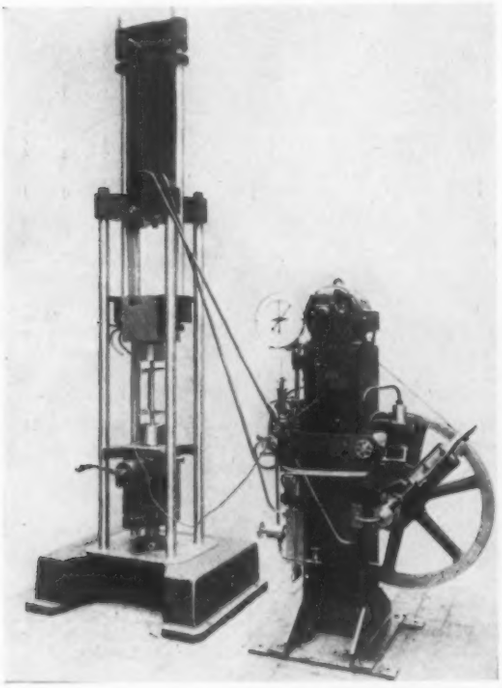
The conservative element still dominates in the affairs of the Amalgamated Association of Iron, Steel and Tin Workers of North America, as shown by the fact that the annual election of officers has resulted in the reelection of all of the retiring officials. Michael F. Tighe remains as president, despite predictions in another publication early this year that those of radical tendencies in the organization were in the ascendency and had the skids greased for sliding him into oblivion. David J. Davis has been reelected secretary and treasurer, Louis Leonard, assistant secretary, Herbert F. Reese, vice-president, boiling and finishing division, Walter Larkin, vice-president, sheet and tin plate division, Wesley Riley, Burt Caldwell and R. H. Larner trustees and Ben I. Davis, editor of the *Amalgamated Journal*.

NEW FATIGUE TESTING MACHINE

Accurate Measurement of Stress at High Loads—Usable with Regular Tensile Machines

Means for making fatigue tests have been limited to machines of low load capacity, necessitating the use of rather thin specimens. The development of high tensile alloy steels, used particularly in the automotive industry where resistance of the material to fatigue plays an important rôle, has accentuated this difficulty. If specimens of small cross section are used in such investigations, the results may be largely influenced by surface conditions and may often lead to erroneous conclusions.

The new machine, developed by Dr. Alfred Amsler, consists of a standard Amsler tensile and compression testing machine of familiar design, to which an hydraulic "pulsator" is connected. The pulsator produces periodical variations of pressure, the upper and lower limits of which remain constant during the entire test, independent of any possible deformation of the specimen. In this way fatigue tests can be made until the specimen breaks or until it suffers a definite deformation. The limits of stress intensity can be adjusted before starting the test. They can be read from a load dial and observed during the entire test period. The load impulses are not produced by blows but rise and fall gradually, according to a sine wave curve. By changing the rotational speed of the pulsator, the number of impulses per minute can be varied (usually up to 500 per min.). Higher pressures do not influence the speed of impulses. The pulsator can produce the maximum pressures at the maximum speed.



New Amsler Machine for Making Fatigue Tests

An automatic counter indicates the number of complete stress cycles produced by the pulsator and transmitted to the specimen. The oil delivery from the pulsator to the testing machine proper is adjustable within wide limits and a definite delivery corresponds to a definite stress on the specimen. If the delivery of the pulsator is set to zero, the machine can be used for standard static (tensile, compression, transverse, etc.) tests. The load is measured, as in all hydraulic Amsler machines, by means of a "primary standard" of pressure measurement (piston moving in a cylinder without friction).

The maximum pressure produced by the pulsator is 300 atmospheres, sufficient to operate all Amsler testing machines and most of the other hydraulic presses at maximum loads. The safety limit of operation of large testing machines at rapidly repeated stresses lies at about one-half of their static capacity. Thus, with a standard 100,000-lb. Amsler tensile machine, fatigue tests up to 50,000 lb. dead load can be carried out, whether in tension, compression or bending.

This represents considerable progress in the design and construction of fatigue testing machines, since one had to be satisfied in the past with load variations of two or three thousand pounds maximum, without an accurate measurement of the stresses applied. Another important advantage of the new machine is, of course, the possibility of utilizing a standard tensile machine also for fatigue tests.

The machine described is an addition to the line of testing machinery manufactured by Alfred J. Amsler & Co., of Schaffhouse, Switzerland, represented in the United States and Canada by Herman A. Holz, testing engineer, 17 Madison Avenue, New York.

Triple Punching Attachment

A triple punching attachment for use with its No. ½ Junior universal iron worker has been placed on the market by the Buffalo Forge Co., Buffalo. The use of this attachment on a small size combination punch, shear and bar cutter is regarded as an exclusive feature.

The attachment permits of punching holes of various sizes without changing tools. It is provided with three punches each fitted with a separate gag for individual control. Each punch is interchangeable and the entire attachment can be removed conveniently by loosening four cap screws. It is light in weight and can be handled by one man. The die block used may be removed by loosening one nut. Two set screws bearing against the side of the frame are intended to prevent side motion of the die block, while the one nut holds it firmly down against the frame. Each of the punches is arranged so that it can be kept clear of the work being done by raising it above the work level and tightening it in this position by means of a small set screw. The maximum punching capacity is a 1 in. hole through ½ in. plate.

Triple Punching Attachment for Use on Small Combination Punch, Shear and Bar Cutter

The plant of the Phoenix Iron Works Co., Meadville, Pa., closed for several months, has resumed operations giving employment to several hundred men and Receiver Samuel E. Duff, of Pittsburgh, announces he expects to have work enough to keep the plant running much of the winter.

A progress report on metal springs and a paper by J. O. Keller on various methods of measuring hardness are to be given at a Tuesday morning session of the annual meeting of the American Society of Mechanical Engineers, to be held in New York, Dec. 1 to 4.

European Markets Generally Quiet

Prices Steady and Deliveries in Some Products Tardy—British Pig Iron Dependent on Continental Order Books—Tin Plate Output May Be Regulated

(*By Cable*)

LONDON, ENGLAND, Dec. 2.

IRON and steel markets are quiet but steady. There is a fair amount of inquiry for Cleveland grades of pig iron owing to well-sold order books of Continental producers. America has made further purchases of special irons. Hematite is firm, with fair Continental chiefly Italian, demand.

Foreign ore is more active and sellers are less inclined to quote low prices. Some works are disposed to enter forward contracts and a little has been done for June delivery. Bilbao Rubio is being sold at 22s. 6d. ($5.22) c.i.f. Tees and more is asked now.

Ferromanganese is quiet on decreased activity of Continental iron and steel market. Prices are unchanged.

Domestic demand for finished steel is broadening, especially in the engineering and structural departments, and makers are inclined to advance their prices for forward deliveries. Export buying is poor.

Sheets and Tin Plate

Tin plate markets are dull and makers are anxious for orders. It is proposed to institute control of output, thereby securing a more even distribution of orders. If the proposal is passed, an immediate reduction in the number of mills working is probable.

Galvanized sheets are quiet generally, but makers are well sold and prices are being maintained on account of rising spelter and other costs.

Black sheets are dull. Japanese demand is stagnant, but makers are anticipating a revival before long, especially if negotiations for the stabilization of Japanese exchange rates prove successful.

Continental markets are quiet. Makers generally are well sold, particularly as to semi-finished supplies. Demand from Japan and India still is dull but India is expected to come in owing to advanced freight rates from March onward.

Blooms are being sold at £5 7s. 6d. ($24.94).

It is expected that the Stahlwerk Becker, A. G., at Krefeld, Rhineland, will resume partially this month as a result of a financial arrangement with the Metz Neurath group.

GERMAN MARKET MORE ACTIVE

Heavy Demand for Some Products—Foreign Railroad Material Orders Increase

(*By Radiogram*)

BERLIN, GERMANY, Dec. 1.—The market is moderately active, with prices of semi-finished materials and rolling mill products unchanged. Owing to a revival of building construction, structural steel is much in demand. Demand for thin sheets, hoops and wire is so great that the best delivery term obtainable is three months. In bars the market is weaker.

There are a considerable number of Jugoslav orders for railroad material (reported to be on reparations account). An increasing number of Russian railroad orders also has been received, and contracts to build heavy locomotives for the Danish railroads.

Solingen fine steel firms are organizing a syndicate to do all their foreign selling. Manufacturers of finished products are strongly opposing the demand of the producers of raw and semi-finished iron and steel for an increase of the import duties on these products.

October exports of machinery amounted to 22,200 metric tons, compared with 22,000 tons in September.

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.64 per £1, as follows:

Durham coke, del'd	£1	5s.					$5.80		
Bilbao Rubio ore†	1	4					5.57		
Cleveland No. 1 fdy	4	6	to £4	7s.			19.95	to	$20.18
Cleveland No. 2 fdy	4	1½	to 4	2			18.91	to	19.02
Cleveland No. 4 fdy	4	1					18.79		
Cleveland No. 4 forge	4	0					18.56		
Cleveland basic	4	0					18.56		
East Coast mixed	4	8½	to 4	9			20.53	to	20.65
East Coast hematite	4	19	to 5	0			22.97	to	23.20
Ferromanganese	14	0	to 14	15			64.96	to	68.44
*Ferromanganese	14	0	to 14	15			64.96	to	68.44
Rails, 60 lb. and up	8	10	to 9	0			39.44	to	41.76
Billets	7	5	to 8	0			33.64	to	37.12
Sheet and tin plate bars, Welsh	8	7½					38.86		
Tin plates, base box	1	3½					5.45		
							C. per Lb.		
Ship plates	9	0	to 9	10			1.86	to	1.97
Boiler plates	13	0	to 13	10			2.69	to	2.80
Tees	9	2½	to 9	12½			1.89	to	1.99
Channels	8	7½	to 8	17½			1.73	to	1.84
Beams	8	2½	to 8	12½			1.68	to	1.79
Round bars, ⅝ to 3 in.	9	7½	to 9	17½			1.94	to	2.05
Galv. sheets, 24 gage	17	10					3.63		
Black sheets, 24 gage	12	10					2.59		
Black sheets, Japanese specifications	15	5					3.16		
Steel hoops	10	15	and 12	10*			2.22	and	2.59*
Cold rolled steel strip, 20 gage	16	0					3.31		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)								
Belgium	£3	15s.	to £3	16s.	$17.40	to	$17.63	
France	3	15	to 3	16	17.40	to	17.63	
Luxemburg	3	15	to 3	16	17.40	to	17.63	
Basic pig iron: (a)								
Belgium	3	14			17.17			
France	3	14			17.17			
Luxemburg	3	14			17.17			
Billets:								
Belgium	5	12½			26.10			
France	5	12½			26.10			
Merchant bars:					C. per Lb.			
Belgium	6	0	to 6	5	1.24	to	1.29	
Luxemburg	6	0	to 6	5	1.24	to	1.29	
France	6	0	to 6	5	1.24	to	1.29	
Joists (beams):								
Belgium	6	0			1.24			
Luxemburg	6	0			1.24			
France	6	0			1.24			
Angles:								
Belgium	8	0	to 8	5	1.66	to	1.71	
½-in. plates:								
Belgium	7	5			1.50			
Germany	7	5			1.50			
⅜-in. ship plates:								
Luxemburg	7	5			1.50			
Belgium	7	5			1.50			

(a) Nominal.

POLISH INDUSTRY LANGUISHES

Inflation Beginning and Unemployment Increasing—Iron and Steel Less Active

WARSAW, POLAND, Nov. 17.—A slight improvement in Poland's iron, steel and coal industries is reported in the last few weeks, but the condition is still bad both in Polish Upper-Silesia and in "Congress Poland," the former Russian provinces. The stagnation in the steel trade is part of a general economic crisis; all industries suffer. The stabilized "zloty" is losing its internal buying power and inflation is proceeding. The Bank of Poland note circulation rose from 111,117,000 zlotys on May 10 to 503,701,800 zlotys on Oct. 31, but the circulation of loan notes declined. Circulation of all currencies, including the issues of the Polish Loan Bureau, increased between April 27 and Aug. 31 from 317,054,000 zlotys to 563,489,000 zlotys.

Prices have risen about 25 per cent in the last four months. The result is recurring wage trouble and strikes. In these conflicts only the coal miners have so far had success. In general the employers have held to their argument that they cannot exist if production costs rise any further. In the Upper Silesian smelting industry the 10-hr. day, after being imposed first on July 18 for three months, was in October by Cabinet decree prolonged for another three months. Unemployment increases; the last published figures, already out of date, show 163,276 persons without work on Sept. 6, against only 67,581 on Jan. 1.

Poland Profited by Ruhr Struggle

The cessation of the Ruhr struggle, from which Poland benefited, had a bad effect upon exports of coal and East Upper-Silesian iron and steel. Poland's blast furnaces can produce 1,200,000 tons of pig iron annually, but of this the home market will absorb only 400,000 tons. The Upper-Silesian concerns have long been in a disastrous condition. In September only 6 out of 21 blast furnaces were in operation. Among remedies tried were a freight rate reduction of 20 per cent, abolition of the coal tax and reduction of the turnover tax on exports. The Government refused to take over those concerns which were working at a loss, and heavy debts for arrears of taxes were incurred.

Eighty per cent of the ore consumed in Polish furnaces comes from Sweden. A company called "Polprod" has been formed to exploit native ores, which can with advantage be mixed with the high-grade Swedish ores, and this company already is delivering to smelters 7000 tons a month. In the last few weeks the Bismarckhuette Co. reports an improvement, due to a demand for certain specialties which it produces; and the United Königs & Laura Co. has re-fired several blast furnaces.

Steel Syndicate Suggested

In general the improvement is slight. The suggested remedy is a syndicate for the sale of smelters' products, with branch concerns controlling bars, structural forms, sheets, rails, wheels, etc., similar to the new German Steel Syndicate. Polish steel, however, cannot possibly compete with German. After the miners' successful strike coal prices had to be increased by between 2 and 2.50 zlotys per ton; and this must influence the whole industrial price level upward.

Before the labor troubles iron and steel production in Congress Poland was declining, and in the late summer it nearly ceased, except for rolled goods. Polish Upper-Silesia's output did not continuously decline until June, and it recovered considerably in September. Production was far lower in the first nine months of 1924 than in the corresponding months of 1923:

Polish Production, in First Nine Months	Congress Poland — Metric Tons — Pig Iron	Steel	Rolled Goods
1924	66,177	109,181	82,075
1923	82,851	190,933	129,366
	Polish Upper-Silesia		
1924	209,868	398,376	289,155
1923	312,616	(not reported)	453,133

GERMAN IRON WORKS BUSY

Syndicates in Iron Industry—Better Employment —Traders' Organizations Gaining in Influence

BERLIN, GERMANY, Nov. 17.—With the return to more normal conditions in German industry the rigorous terms of payment, etc., which the cartels were able to enforce during the time of currency inflation have disappeared in most industries. These terms vary even in the same industry but, owing to the scarcity of funds prevailing during the last few months, manufacturers had in most cases to wait several weeks for payment. Because of these conditions several cartels have extended the stipulated time, especially as most customers were unable to meet their obligations. The customers naturally are demanding longer credit and considerable friction is caused.

Since 1914 producers have occupied a much stronger position than the traders and consumers, but a change is taking place gradually in this respect. Since the beginning of the industrial crisis after the stabilization of the currency, traders and consumers find it much easier to enforce their terms and, in many industries, the traders are more strongly organized now, which makes them a factor for the producers and the cartels to take into account. Generally the organization of the large syndicates is, however, still unimpaired and even the cartel court has only in comparatively few cases found occasion to step in. Though some of the syndicates and cartels have had to make their rules more lenient, the majority still retain their position.

Aided by the conditions prevailing, the traders' organizations are gaining gradually in influence. They generally demand abolition of import restrictions, to remove the isolation of the German market from foreign trade, and they are exerting a considerable influence on the negotiations pending for trade agreements with foreign countries.

Employment is continually improving, though the boom expected in some quarters after the acceptance of the Dawes plan, or after the success of the foreign loan, has not taken place. As the purchasing power in the home market is generally reduced, a boom probably would have been followed by a strong setback after a short time. According to an official inquiry, the percentage of firms poorly employed decreased from 49 to 42 during October and the firms well employed increased from 15 to 18 per cent.

After the formation of the new steel syndicate there is a renewed activity to form special conventions for the various iron and steel products and several meetings of the manufacturers are being held this week. The establishment of organizations for the producers of semi-finished material, and probably of those producing sheets and tubes, seems to meet with no difficulties, while for other products, as tin plate, bar iron, etc., the formation of conventions seems unlikely at present.

Demand in iron products is undiminished. Some works are even declining more orders, as they are fully booked for the next few months. Export business also is more lively, and prices have advanced. Current quotations are, on the average, as follows, in gold marks per metric ton (with American equivalents in dollars per gross ton or cents per pound):

Ingots	100	($24.20)
Blooms	105	(25.41)
Billets	112	(27.10)
Sheet bars	117	(28.31)
Bar iron	122	(1.32c.)
Structural shapes	117	(1.27c.)
Universal iron	132	(1.42c.)
Hoop iron	155	(1.67c.)
Sheets, heavy	138	(1.49c.)
Sheets, medium	150	(1.62c.)
Plates 1 to 3 mm.*	180	(1.95c.)
Plates below 1 mm.	195	(2.11c.)
Rolled wire	135	(1.46c.)
Wire, drawn bright	160	(1.73c.)

*No. 19½ to No. 11½ gage.

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ESTABLISHED 1855

THE IRON AGE

EDITORS:

A. I. FINDLEY — WILLIAM W. MACON — GEORGE SMART

C. S. BAUR, *General Advertising Manager*

Member of the Audit Bureau of Circulations and of Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

F. J. Frank, *President* — PRINTED IN U. S. A. — George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. Charles G. Phillips, *Pres.* A. C. Pearson, *Vice-Pres.* F. J. Frank, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: Guardian Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1.

Subscription Price: United States and Possessions, Mexico, Cuba, $6.00; Canada, $8.50; Foreign, $12.00 per year. Single copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, New York, under the Act of March 3, 1879.

Prolonged Business Activity

THERE is more effort than seems necessary to "explain" double million share days on the Stock Exchange and the recent rise in prices. After all, share values have to represent earning power, for cost of plant is not a safe basis and the selling price of the plant would be dictated largely by its ability to make money. Earnings involve both rate and time and an influence that increases the time is as important as one that increases the rate.

The reasonable inference is that the stock market has been discounting a prolonged period of business activity rather than a sharp increase. It would scarcely count upon a sharp increase in the rate of earning and a long period of the high earning rate, for the thing can hardly be done. The lessons of the past few years have been that thrift and hard work are necessary, easy profits being illusive.

Expectation that there will be a prolonged period of business activity of a reasonable or moderate degree is readily understood. Belief that commodity prices will advance sharply and provide easy profits could not be accepted so readily. The "improvement" in the outlook, whatever the nature of the improvement may be, is universally ascribed to the election. Now, what the election did was not to remove for a short time a great chance of the Government falling into unsafe hands, but to remove for a long time a small chance of its doing so.

To ascribe everything that now occurs in business to the election, however, is to ignore some very important influences, including in particular the influence of human nature. It is not fanciful to say that the election came at "the psychological moment." There had been favorable economic developments. The improvement in the position of both farmers and railroads had attracted general attention.

As to the human element, the commodity price index, as compiled by the Bureau of Labor, had reached 159 in March, 1923, and stood at the same figure in the following month. It declined generally to a low point in June of this year, 145. Then it turned slightly upward. In many lines of trade the feeling would be that if the prices in these lines had in them the ability to go lower they would have done so before the election. In finished steel products the last advance ended late in April of 1923, and the lowest prices afterward were in October of this year, 18 months later. Steel prices always have moved in protracted swings and the steel buyer, after such a lapse of time, was quite prepared to see a turn in the trend.

The election created confidence, and confidence now may be counted upon to create business, i.e., additional business, for we have had quite a fair volume of business right along. The third week before the election we had an eleven hundred thousand freight car loading week, when last year we hailed a million car week as an achievement.

The course of affairs in the steel market in the past month has been in line with what is indicated above. The sellers of steel have not tried to grab some quick profits but have followed a policy calculated to build up the market. They have allowed manufacturing consumers to buy at old prices in a moderate way, before being asked to pay advances, so as to afford these manufacturers time to work their own selling prices upward. An active and slowly stiffening market is what the mills expect; a considerable period of business activity, not a sharp bulge.

Better Outlook for Machine Tools

NOW that we have been passing through a period of buying that is partly speculative, at once a cause and an effect of the upward swing of business improvement, there shortly should follow buying for continuing consumption. This will be forced as demand takes up the slack represented by the excess of current release of orders over the volume going into current use. Buying of the basic commodities owes its expansion to the great improvement in general business sentiment and was accelerated, as in the case of steel, by

prices which were attractive to the buyer in a market of a definite advancing tendency.

Continuing demand on the present scale will mean greater factory activity in a variety of lines. This in turn will call for efficient methods, not alone to keep manufacturing costs down, as has been the watchword for some time, but to increase output without too great dependence on a labor reservoir that might not be equal to new drafts upon it. As soon as business passes well beyond the point of hesitancy, capital expenditures will be called for and then production and labor-saving machinery will have its day.

It is not surprising, therefore, that machine tool builders are showing a lively interest in present conditions. Through their national association they are setting the stage for a widening demand, and metal working establishments may expect to hear cogent arguments in the coming months on the economic importance of the latest in metal cutting machinery. The invitation to reappraise existing equipment in terms of specific usefulness to the plant and in the light of new machines available will be repeated as before, but there are signs that the response will be much more favorable than has been common in the year last past.

Stabilized Commodity Prices

IN two respects prices of commodities appear to have become stabilized on a basis about 50 per cent above the 1913 level. Not only has there been very slight change during the past year and a half, in the average as reported monthly by the United States Bureau of Labor Statistics, but there has been a gradual but definite approach of the extreme figures toward that average. In other words, a long standing maladjustment of prices has been corrected to a large extent with the sharp advance in farm and food prices during the past few months and some coincident decrease in those items which were furthest above the average a year ago—such as cloths and clothing, building materials, house furnishing goods and fuel and lighting.

In connection with the first element mentioned, it may be noted that from June, 1923, to October, 1924, both inclusive, the highest level of commodity prices was 54 per cent above the 1913 level, this figure occurring in June and September of last year, while the lowest level, in June of this year, was 45 per cent above 1913. This comparison might be extended considerably further back, for the extreme range between May, 1922, and date has been from the 45 per cent minimum excess to a maximum of 59 per cent in March and April of last year. Such changes as have taken place over this interval have been so gradual, and so in keeping with the order of events as we have known them for many years, that it is fair to assume a practical stabilization at about 50 per cent above pre-war. That the price level in the immediate future is likely to increase—indeed it already is doing so—does not negative this viewpoint.

With regard to the other element, it is pertinent to observe that three of the nine items reported upon by the bureau were more than 29 "points" above the average level one year ago, while only one of those items is more than 20 points above the average level today, that being the clothing group. Similarly, there has been a gradual approach to the average by those items which were below the average, in all cases except that of metals and metal products. This one item stood in October more than 10 per cent lower than in October of last year. It occupies the lowest relative position of all items, except the small miscellaneous one, being 24 to 25 points under the average, which corresponds closely with the position of the lowest item a year ago.

Thus, the four groups of farm products, foods, chemicals and miscellaneous, all of which were below the general average a year ago, have increased or approached that general average, but without reaching it. The four items of clothing, fuel, building materials and house furnishings, which were above the general average a year ago, have approached that average, also without reaching it.

There still remains a considerable margin to make up, on the part of cloths and clothing particularly, this being now more than 88 per cent above 1913, compared with 52 per cent for the general level. House furnishings and building materials both are about 71 per cent above prewar, while the fuels remain 62 per cent "up." With a further flattening out of prices for those four items—a process which does not appear in immediate prospect—a still closer approach to a stabilized condition, at approximately the prewar price relationship, will have been reached.

Legislation Not Needed

THE suggestion of Bernard M. Baruch, formerly head of the War Industries Board, that Congress create a court of commerce which would decide for business men important questions that might confront them has not been received with any enthusiasm. Mr. Baruch expressed the opinion that while the Federal Trade Commission is an inquisitorial body, the proposed court of commerce would appeal to the business man as the Supreme Court does to the lawyer. The country is not, however, in a mood for creating more commissions and courts unless some of those now in existence are abolished. Before any court or commission could make a decision on a business problem, there would needs be much investigating, and it would be difficult to avoid inquisitorial methods. This fact has been illustrated in a most illuminating way in the agitation against the Pittsburgh basing point.

A proposition that has met with some favor is to have the Department of Commerce or the Department of Justice absorb the Federal Trade Commission. That plan would have the advantage of making the commission responsible to a department head, whereas at present it is a law unto itself, except, of course, so far as its decisions may be reviewed by the courts. The Federal Trade Commission, however, has been gaining strength, due particularly to its more reasonable policy within the past year.

On the whole, the outlook is not favorable for the creation of the court proposed by Mr. Baruch,

or the passing of any important legislation relating to the Federal Trade Commission. Perhaps after a year of being let alone the business world will continue to demonstrate that little if any additional legislation is desirable.

The Revival in the Coke Trade

LIKE the scrap market, the beehive coke market is a good indicator of the course of affairs in the iron and steel trade, being more or less barometric in character, and coke makes a broader showing than scrap, in that it furnishes statistics of production as well as of price movements.

The Connellsville coke trade is now experiencing a sharp recovery. The market for third quarter furnace coke was approximately $3. For fourth quarter a $3.25 price was attained, but was not well held. In the past three weeks there has been a sharp buying movement for first quarter, and the initial price, readily paid, was $3.25. After certain operators had secured backlogs, the price went to $3.50 at one jump, there being a fairly heavy turnover at that figure, and later $3.75 was done.

The rise in price is very significant and equally so is the volume of turnover, which greatly exceeds the movement for the present quarter, and the operators expect to make further sales in connection with furnaces now idle deciding to go into blast.

Some of the first quarter coke was sold for use at furnaces not now in blast, but the production statistics of the Connellsville *Courier* show that already there has been a large increase in coke production in the Connellsville and Lower Connellsville region. The low week for the merchant ovens was that ended Aug. 9, with only 30,120 tons made, while the week of Nov. 22 showed 61,040 tons, so that the merchant production doubled in a little over three months.

The merchant oven production is in relation to the activity at blast furnaces which use purchased coke. The furnace oven production is in a different category. The furnace ovens are owned largely by steel interests, particularly the Steel Corporation, which have by-product ovens and thus use the beehive ovens to carry the peak of the load. A small excess of furnace operation may cause a relatively large increase in operation of the furnace-owned beehive ovens of the region. The low week for the furnace ovens was that of July 12, when only 15,000 tons was reported, while for the week of Nov. 22 the output was 38,000 tons. Both outputs, however, were extremely low, for the high week of the year, that of March 15, showed 160,000 tons.

The Geological Survey reports monthly the total production of beehive coke and of by-product coke. These figures indicate the large drop earlier in the year in beehive production and the much smaller drop in by-product production, while eventually they will show the large increase in beehive production now foreshadowed by the heavy buying for the first quarter of the new year. March was the high month in coke production, with 3,221,000 tons by-product and 1,343,000 tons beehive, making a total of 4,564,000 tons. The subsequent low month was July for by-product, with a decrease of only 26 per cent, and August for beehive, with the remarkable decrease of 68 per cent. Since August both operations have been increasing.

PIG iron from India is a fairly large proportion of the total now coming into the United States. Out of 160,123 gross tons of pig iron imported in the first nine months of this year, 44,111 tons or 27.5 per cent originated in India. While the Pacific Coast has been thought of as the market for Indian iron, not a little is being consumed on the Eastern seaboard. An analysis of the Government import data by months shows that in the four months ended with September total receipts of Indian iron, about 8000 tons per month, exceeded by a considerable amount the pig iron imports at Pacific ports. Further expansion is not unlikely if domestic pig iron prices go higher and foundry operations show the expected increase.

New Books Received

Corrosion of Metals. By Ulick R. Evans. Pages 212, 5½ x 8¾ in., illustrated. Published by Longmans, Green & Co., 55 Fifth Avenue, New York. Price, $5.

American Society for Testing Materials. Tentative Standards, 1924. Pages 763, 6 x 9 in., illustrated. Published by the American Society for Testing Materials, 1315 Spruce Street, Philadelphia. Price, $7 in paper and $8 in cloth binding.

American Society for Testing Materials. Standards 1924. Pages 1230, 6 x 9 in., illustrated. Published by the American Society for Testing Materials, 1315 Spruce Street, Philadelphia. Price, $11 in cloth and $12.50 in half-leather binding.

Power Plant Machinery. Vol. II, Details and Accessories. By Walter H. James and Myron W. Dole. Pages 268, 6 x 9¼ in., illustrated. Published by John Wiley & Sons, Inc., 440 Fourth Avenue, New York. Price, $3.

The Planning, Erection and Operation of Modern Open-Hearth Steel Works. By Hubert Hermanns. Pages 307, 7¼ x 10 in., illustrated. Published by the D. Van Nostrand Co., 8 Warren Street, New York. Price, $10.

Industrial Coal Purchase, Delivery and Storage. Report of the American Engineering Council. Pages 419, 6 x 9 in., illustrated. Published by the Ronald Press Co., 20 Vesey Street, New York. Price, $5.

Forty Years of Hardware. By Saunders Norvell. Pages 443, 5 x 7½ in., illustrated. Published by *Hardware Age*, 239 West Thirty-ninth Street, New York. Price, $3.

Metal Statistics Now Available to Non-Member Subscribers

The American Bureau of Metal Statistics, 115 Broadway, New York, Dr. W. R. Ingalls, director, is now making all of its statistical work available to the public on subscription terms, namely, $100 per annum for the full service and $50 for any one metal. Subscribers get all statistics with the same fullness and at the same time as members of the bureau.

The Unique Brass Mfg. Co., West Jefferson Avenue, Detroit, is developing maximum capacity at its plant for the manufacture of brass products for automotive service, giving employment to a full working force of about 140 men. It is expected to continue on the present basis for an indefinite period.

IMPROVEMENT IN GERMANY

Many Works So Busy They Are Declining Further Orders—8-Hr. Day Again Urged

BERLIN, GERMANY, Nov. 10.—Conditions in the iron and steel industry are further improving and most of the blast furnaces that had been blown out during the summer have been rekindled. The ore mines are not in full working order again and producers find it increasingly difficult to compete against the better foreign ore. The steel works are also encountering a strong foreign competition abroad. Business in rolled material has become brisk and the iron works are having a veritable boom at present. Some of them are even declining further orders, as they are fully booked for some time, both for home and foreign account.

Demand for semi-finished material is strong and blooms are scarce. The orders for rails, plates, etc., recently placed by the railroad authorities, have largely contributed to the improvement. Sheet iron mills also are better employed, mainly on home orders. Export business shows hardly any betterment. Large quantities of wire are exported. Pig iron prices have advanced slightly and demand in foundry iron is still brisk. The scrap market also shows signs of improvement. During the last fortnight prices had an upward tendency, and present quotations are about on the average, as follows:

In marks per metric ton, with American equivalent per gross ton or c. per lb.:

Blooms	104	$25.17
Billets	108	26.14
Sheet bars	116	28.07
Bar iron	120	1.30c.
Structural shapes	114	1.23c.
Universal iron	130	1.40c.
Hoop iron	154	1.66c.
Sheets, heavy	140	1.51c.
Sheets, medium	155	1.67c.
Plates, 1 to 3 mm.	175	1.89c.
Plates, below 1 mm.	185	2.00c.

The question whether the work on blast furnaces and rolling mills in the cokeries and the steel works would fall under the provisions of the law about working hours, which stipulates that workers on exceptionally heavy work and those exposed to heat, poisonous substances or heavy dust shall not work more than 8 hr., is again ventilated and the Government intends to make the 8-hr. shift again obligatory. Many firms which have introduced the two-shift system would be forced to return to three 8-hr. shifts. This will remove one of the most hotly disputed points in the differences between masters and men in this country.

BELGIAN PRICES HIT BOTTOM

Increases Noted in a Stiffer Market—Analysis of Causes of Better Conditions

ANTWERP, BELGIUM, Nov. 8.—The crisis in the Belgian market seems to be over. If no large business has yet been done at the higher prices asked, it is sure that the decline of prices is finished. Really the bottom of prices has been reached. A large demand at once appeared from Germany and, instead of being the most feared competitor on the foreign market, this country became for certain commodities a large buyer in Luxemburg and Lorraine and even in Belgium.

Belgian sellers, considering that just now they will not have to compete with such low German prices as during previous months, have at once taken advantage of this situation and, with large demand in hand, have increased their prices in a rather unexpected proportion. Of course everybody long has known that the situation of the market would not remain so bad and also that prices could not continue falling forever. In fact, as quotations were pushed under cost price, a good number of makers decided two to three weeks ago to reduce their output, which by itself caused a firmness of some sort. During this somewhat better period works got the opportunity to book plenty of orders and nearly all of them are provided with orders for six to eight weeks.

Causes of Better Conditions

Many other factors now led to still a larger and sudden firmness: (1) Foreign rates of exchange remained high and were this week again higher. (2) Large purchases were made from Germany and for Germany, especially for semi-finished products, materials and joists, either on speculation or with the view of stocking in prevision of the eventual and expected income duties. (3) Total absence of German competition. (4) Reappearance of demands from different parts of the world, where wants are known to be large, considering that no purchases have been made for a long time. (5) Large orders of rails and accessories from the Belgian Government. (6) The results of the English elections. (7) Big offers made by important exporters, who up to this moment speculated on the fall and now are trying to place the largest part of their orders, remained open, at moderate prices.

Their anxiety to book at once, for their earliest requirements at least, add without doubt to the firmness acquired. The prices offered by them, however, do not reach, in most cases, the makers' quotations. That is why the number of transactions is still more or less limited. Ruling prices, therefore, are determined with difficulty.

This recovery of prices refers especially to steel products and semi-finished materials. It is for the first ..med commodities that the largest purchases were made by Germany, South America and India, not forgetting the Belgian exporters themselves. Prices became £5 12s. 6d. to £5 15s., with in some cases up to £5 17s. 6d. or £6 per ton, f.o.b. Antwerp ($27.25 or 1.24c. per lb.). These prices are mostly nominal, as not many buyers were disposed to pay more than $25.50 (1.16c.), or for quick deliveries perhaps $26. Nominal prices per ton, f.o.b. Antwerp, are as follows:

		Per Lb.
Bars	530 fr. or	$25.50 (1.14c.)
Joists (beams)	525	25.20 (1.14c.)
Rods	600	28.85 (1.31c.)
Corrugated bars	650	31.25 (1.42c.)
Hoops	750	36.00 (1.63c.)
Cold rolled steel hoops	1,000	48.00 (2.18c.)
Drawn steel—Squares	975	46.85 (2.13c.)
Drawn steel—Rounds	950	45.65 (2.07c.)
Drawn steel—Hexagons	1,050	50.50 (2.29c.)
Spring steel	1,000	48.00 (2.18c.)
Commercial iron No. 2	560	26.90 (1.22c.)
Commercial iron No. 3	580	27.85 (1.26c.)
Commercial iron No. 4	600	28.85 (1.31c.)
Thomas sheets, 0.5 mm.	1,200	57.50 (2.61c.)
Thomas sheets, 1 mm.	1,050	50.50 (2.29c.)
Thomas sheets, 2 mm.	800	38.45 (1.74c.)
Thomas sheets, 3 mm.	700	33.65 (1.53c.)
Thomas sheets, 5 mm.	640	30.75 (1.39c.)
Galvanized sheets, 0.5 mm.	2,250	108.20 (4.91c.)
Galvanized sheets, 1 mm.	1,650	79.35 (3.60c.)
Polished sheets, average price	1,600	76.90 (3.49c.)
Steel bands	700	33.65 (1.53c.)
Wire—Galvanized	1,100	52.85 (2.40c.)
Wire—Barbed	1,250	60.00 (2.72c.)
Wire—Plain	850	40.85 (1.85c.)
Wire—Annealed	900	43.30 (1.96c.)
Wire nails	850	40.85 (1.85c.)
Wire rods	580	28.00 .....
Billets, soft Thomas steel	480	23.10 .....
Blooms	465	22.35 .....
Largets	510	24.55 .....
Rails	725	34.90 .....

Large orders for billets and blooms were placed last week and beginning of this week. Prices asked by makers are now higher than those offered by exporters. Luxemburg and Lorraine makers sold much of this material to Germany and therefore are for the moment no longer quoting.

Not much business in sheets developed. The market is firm but sellers ask too high prices.

Good Demand for Pig Iron

The pig iron market is favored with good demand and prices have gone upward. Foundry iron No. 3, phosphorus quality, costs 345 to 350 fr., equaling $16.75, f.o.b. Antwerp, i.e., an increase of price on the franc quotation but not on the dollar. The demand for export was important and prices obtainable from England and Scotland attained easily £3 12s. to £3 14s., f.o.b. Antwerp.

Belgian semi-phosphorus is quoted approximately at 380 to 385 fr. per metric ton, f.o.b., i.e., $18.50, with $19 for the quality Si 2.75 to 3.25 per cent.

NOVEMBER IRON OUTPUT

Increase Over October 3749 Tons Per Day

Net Gain of 23 Furnaces, with 27 Blown In and 4 Shut Down

According to returns collected very largely by wire, the pig iron output in November made a small but substantial gain over October of 3749 tons in the daily rate. This is an increase of about 4.5 per cent as compared with about 17 per cent in October over September. The feature of the November record was the sharp increase in active furnaces.

The production of coke pig iron for the 30 days in November amounted to 2,509,673 gross tons, or 83,656 tons per day as compared with 2,477,127 tons, or 79,907 tons per day for the 31 days in October. This is an increase of 32,546 tons, or 3749 tons per day. The increase in November is the smallest in the last three months.

There were 27 furnaces blown in and only 4 blown out or banked, the net gain being 23 as compared with 9 in October and 23 in September. The capacity of the 205 furnaces active on Dec. 1 is estimated at 89,100 tons per day, contrasting with 81,490 tons per day for the 182 furnaces in blast on Nov. 1. Of the 27 furnaces blown in last month 9 were Steel Corporation furnaces, 10 were independent steel units and 8 were merchant stacks. Two merchant furnaces were shut down and one each by the independent steel and Steel Corporation companies.

Ferromanganese made in November was 13,448 tons, with the spiegeleisen total at 8835 tons, both only moderate in quantity.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months from November, 1923, is as follows:

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
November, 1923	72,352	24,124	96,476
December	69,921	24,304	94,225
January, 1924	73,368	24,016	97,384
February	83,126	22,900	106,026
March	86,276	25,533	111,809
April	82,101	25,680	107,781
May	62,176	22,182	84,358
June	50,237	17,304	67,541
July	43,353	14,224	57,577
August	45,591	15,284	60,875
September	50,312	18,130	68,442
October	59,952	19,955	79,907
November	63,230	20,426	83,656

The figures for daily average production, beginning with January, 1918, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1918—Gross Tons

	1918	1919	1920	1921	1922	1923	1924
Jan.	77,799	106,525	97,264	77,945	53,063	104,181	97,384
Feb.	82,835	105,006	102,720	69,187	58,214	106,935	106,026
Mar.	103,648	99,685	108,900	51,468	65,675	113,673	111,809
Apr.	109,607	82,607	91,327	39,768	69,070	118,324	107,781
May	111,175	68,002	96,312	39,394	74,409	124,764	84,358
June	110,793	70,495	101,451	35,494	78,701	122,548	67,541
July	110,354	78,340	98,931	27,889	77,592	118,656	57,577
Aug.	109,341	88,496	101,529	30,780	58,586	111,274	60,875
Sept.	113,942	82,932	104,310	32,850	67,791	104,184	68,442
Oct.	112,482	60,115	106,212	40,215	85,092	101,586	79,907
Nov.	111,802	79,745	97,830	47,183	94,990	96,476	83,656
Dec.	110,762	84,944	87,222	53,196	99,577	94,225	.....
Year	105,496	83,789	99,492	45,325	73,645	109,713	.....

Production of Steel Companies—Gross Tons

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the foregoing totals of steel making iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total Production		Spiegeleisen and Ferromanganese			
			1923		1924	
	1923	1924	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan.	2,479,727	2,274,005	19,358	12,056	20,735	7,948
Feb.	2,259,154	2,410,658	21,282	3,657	22,405	9,870
Mar.	2,724,305	2,674,565	20,730	13,832	22,351	13,796
Apr.	2,704,360	2,463,027	20,808	7,440	23,580	4,240
May	2,976,892	1,927,461	19,568	9,533	14,993	9,336
June	2,727,208	1,507,110	19,717	18,289	20,049	9,405
½ year	15,871,646	13,256,826	121,564	64,807	124,113	54,595
July	2,752,738	1,343,952	26,493	12,876	14,367	15,328
Aug.	2,680,851	1,413,314	22,045	5,586	10,718	8,010
Sept.	2,363,967	1,509,360	23,206	4,478	13,263	5,033
Oct.	2,394,922	1,858,502	20,015	15,931	7,780	10,047
Nov.	2,170,567	1,896,886	14,839	16,783	13,448	8,835
Dec.	2,167,563	.....	18,069	10,124	.....	.....
Year	30,402,254	.....	246,231	130,585	.....	.....

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces for November and the three months preceding.

Pig Iron Production by Districts, Gross Tons

	Nov. (30 days)	Oct. (31 days)	Sept. (30 days)	Aug. (31 days)
New York	165,594	145,930	101,702	80,686
New Jersey	.....	.....	.....	.....
Lehigh Valley	80,634	79,473	63,458	57,745
Schuylkill Valley	51,786	51,966	51,927	51,153
Lower Susquehanna and Lebanon Valleys	36,321	37,157	27,233	21,696
Pittsburgh district	528,589	519,015	437,864	425,471
Shenango Valley	88,939	86,279	84,018	82,058
Western Pa.	119,099	116,730	82,639	59,479
Maryland, Virginia and Kentucky	65,389	66,896	41,470	34,106
Wheeling district	101,862	94,976	80,465	72,678
Mahoning Valley	240,141	222,344	195,292	167,073
Central and Northern Ohio	263,734	265,020	243,011	222,070
Southern Ohio	32,093	34,722	15,542	12,243
Illinois and Indiana	388,534	390,556	302,112	271,474
Mich., Minn., Mo., Wis., Colo. and Utah	106,536	102,839	92,764	98,682
Alabama	233,124	250,472	221,190	215,556
Tennessee	7,298	12,752	12,487	14,975
Total	2,509,673	2,477,127	2,053,264	1,887,145

Capacities in Blast Dec. 1

The following table shows the number of furnaces in blast Dec. 1 in the different districts and their capacity, also the number and daily capacity in gross tons of furnaces in blast Nov. 1:

Coke and Anthracite Furnaces in Blast

Location of Furnaces	Total Stacks	Dec. 1 In Blast	Dec. 1 Capacity per Day	Nov. 1 In Blast	Nov. 1 Capacity per Day
New York:					
Buffalo	22	15	5,750	13	5,100
Other New York	5	0	....	0	....
New Jersey	4	0	....	0	....
Pennsylvania:					
Lehigh Valley	12	6	2,500	5	2,400
Spiegeleisen	2	1	160	1	155
Schuylkill Valley	15	6	2,100	5	1,975
Lower Susquehanna	9	2	925	2	925
Ferromanganese	1	1	55	1	45
Lebanon Valley	4	1	190	1	225
Ferromanganese	2	1	40	1	45
Pittsburgh District	55	37	18,000	34	16,575
Ferro and spiegel	4	2	295	3	310
Shenango Valley	17	8	3,300	6	2,785
Western Pa.	22	10	4,350	9	3,765
Ferro and spiegel	2	0	....	0	....
Maryland	5	4	1,900	4	1,955
Ferromanganese	1	1	100	0	....
Wheeling District	14	9	3,800	7	3,265
Ohio:					
Mahoning Valley	28	17	8,520	14	7,285
Central and Northern	25	17	9,300	15	8,550
Southern	14	4	1,370	3	1,120
Illinois and Indiana	42	26	14,500	21	12,725
Mich., Wis. and Minn.	12	6	2,400	6	2,570
Colo., Mo., and Utah	6	3	1,150	3	1,050
The South:					
Virginia	17	2	200	1	125
Ferromanganese	1	1	85	1	50
Kentucky	7	0	....	0	....
Alabama	39	22	7,725	23	8,080
Ferromanganese	1	1	85	0	....
Tenn., Ga. and Tex.	15	2	200	3	410
Total	403	205	89,100	182	81,490

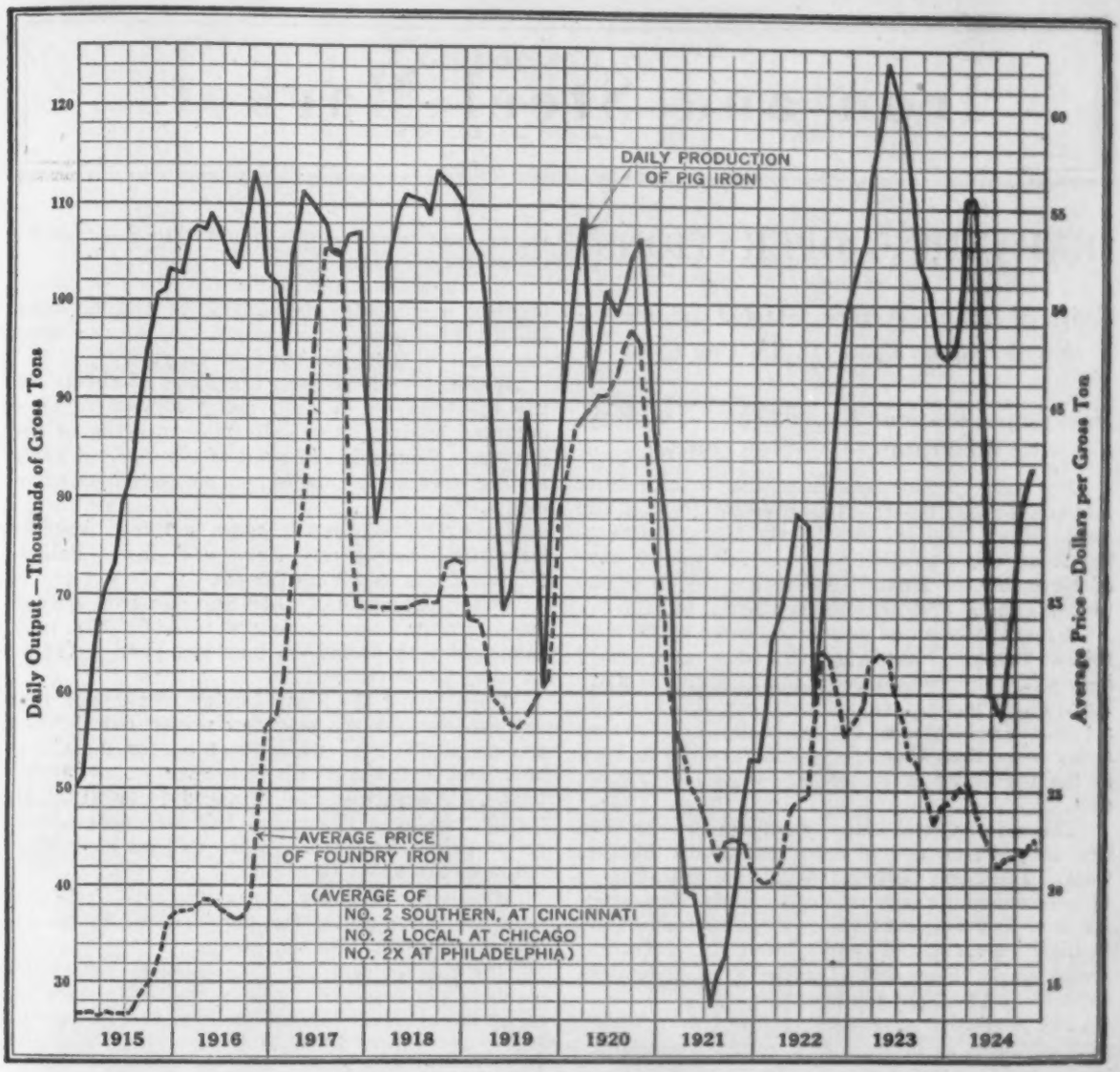

Diagram of Pig Iron Production and Price

Among the furnaces blown in during November were the following: J furnace at the Lackawanna plant of the Bethlehem Steel Corporation and one Niagara furnace of the American Radiator Co. in the Buffalo district; one furnace at the Bethlehem plant of the Bethlehem Steel Corporation in the Lehigh Valley; one Warwick furnace in the Schuylkill Valley; one Edgar Thomson and one Isabella furnace of the Carnegie Steel Co. and one Eliza furnace of the Jones & Laughlin Steel Corporation in the Pittsburgh district; No. 3 Farrell furnace of the Carnegie Steel Co. and No. 3 Shenango furnace in the Shenango Valley; K furnace at the Cambria plant of the Bethlehem Steel Corporation and the Emporium furnace in western Pennsylvania; the Pulaski furnace in Virginia; C furnace at the Maryland plant of the Bethlehem Steel Corporation in Maryland; No. 3 Mingo furnace of the Carnegie Steel Co. and the Top Mill furnace of the Wheeling Steel Corporation in the Wheeling district; two Haselton furnaces of the Republic Iron & Steel Co. and one East Youngstown furnace of the Youngstown Sheet & Tube Co. in the Mahoning Valley; No. 2 furnace of the National Tube Co. and the Upson furnace in central and northern Ohio; the Globe furnace in southern Ohio; one Calumet furnace of the Wisconsin Steel Co., No. 2 South Chicago furnace of the Illinois Steel Co., Nos. 4 and 7 Gary furnaces and the Federal furnace in the Chicago district; one Bessemer furnace of the Tennessee Coal, Iron & Railroad Co. in Alabama.

Among the furnaces blown out or banked during November were the following: Neville Island furnace of the Carnegie Steel Co. in the Pittsburgh district; F furnace of the Cambria plant of the Bethlehem Steel Corporation in western Pennsylvania; one furnace of the Alabama Co. in Alabama and the LaFollette furnace in Tennessee.

Production and Price Chart

The fluctuations in pig iron production from 1915 to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of the daily average production, by months, of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnaces in Chicago, and No. 2X at Philadelphia. They are based on the weekly quotations of THE IRON AGE.

Production of Coke and Anthracite Pig Iron in United States by Months, Beginning Jan. 1, 1920—Gross Tons

	1920	1921	1922	1923	1924
Jan.	3,015,181	2,416,292	1,644,951	3,229,604	3,018,890
Feb.	2,978,879	1,937,257	1,629,991	2,994,187	3,074,757
Mar.	3,276,907	1,595,522	2,035,920	3,523,388	3,466,036
Apr.	2,739,797	1,193,041	2,072,114	3,549,736	3,233,428
May	2,985,682	1,221,231	2,306,679	3,567,694	3,615,110
June	3,043,540	1,064,833	2,361,028	3,676,445	3,026,221
½ year.	18,138,986	9,428,166	12,050,683	20,841,534	17,434,492
July	3,067,043	864,555	2,405,365	3,678,334	1,784,899
Aug.	3,147,402	954,193	1,816,170	3,449,493	1,887,145
Sept.	3,129,323	985,529	2,032,720	3,125,512	2,052,264
Oct.	3,292,597	1,246,676	2,627,844	3,149,158	2,477,127
Nov.	2,934,908	1,415,481	2,849,703	2,894,295	2,500,673
Dec.	2,703,855	1,649,086	3,086,898	2,920,962	.....
Year*	36,414,114	16,543,686	26,880,383	40,059,308	.....

*These totals do not include charcoal pig iron. The 1923 production on this iron was 251,177 tons.

Iron and Steel Markets

EXPANDING OPERATIONS

Gain of 23 in Active Blast Furnaces—Steel Works Close to 75 Per Cent

Heavy Specifications Rather Than New Buying the Feature—Pig Iron Quieter

Pig iron production gives the first definite measure of last month's improvement in iron and steel. From 2,477,127 tons for the 31 days of October it advanced to 2,509,673 tons for the 30 days of November, or from 79,907 tons a day to 83,656 tons, a gain of 3749 tons in the daily rate.

A more pronounced gain is indicated by the fact that 27 furnaces blew in in the month, while only 4 blew out, fully two-thirds of the 27 going in after Nov. 15. Thus the capacity of the 205 furnaces active on Dec. 1 was 89,100 tons a day, or 7610 tons a day more than that of the 182 furnaces in blast at the beginning of November—a gain of 9.3 per cent.

The gain in steel output has been greater than that in pig iron and is more marked in the past week. The Steel Corporation is now operating at 74 per cent of its ingot capacity, while the average for independent producers is close to that figure. In the Pittsburgh and near-by districts steel works are at nearly 75 per cent of capacity, as against but little over 60 per cent one month ago.

The protection given buyers just before the recent advances in finished steel prices was counted on to cover requirements in the early months of 1925, but a good deal of the material is being called for already, and it now looks as though December would compare favorably in production with some of the earlier months of the year.

Under these conditions the falling off in new buying in the past two weeks, apart from railroad and construction orders, has not been surprising. Meanwhile there are signs of an increasing consumption in some secondary lines which is counted on to sustain the new prices when the test comes.

In both track work and equipment railroad buying is well sustained. Of about 57,000 tons of rails bought by the Southern Railway, 48,700 tons will be rolled at Ensley, 2800 tons at Gary and 5000 to 6000 tons at Sparrows Point. The Pennsylvania Railroad is negotiating this week on about 100,000 tons. Five mills share in heavy Missouri Pacific orders for tie plates, spikes and bolts—30,000 tons in all.

New car business includes 1000 for the Wabash and the St. Louis Southwestern has revived an inquiry for 1000. The Missouri Pacific has entered the market for 3000 and the Northern Pacific has increased a pending inquiry by 1000.

With bookings of some 44,000 tons for the week, the volume of fabricated steel business in the four weeks since the election appears to be two and one-half times that for the four weeks preceding, and the latter was close to the average for the year. Similarly new inquiries, amounting to 28,000 tons, show one-half more tonnage offered in the four weeks since than in the four weeks before the election.

Cleveland has had an active week in semi-finished steel, sales amounting to 150,000 tons, chiefly sheet bars, practically taking up the sheet bar capacity there for the first quarter.

While there have been fair sales of sheets for the first quarter, a good many consumers have deferred buying, automobile makers being of the number. Some mills in need of tonnage for early rolling have made concessions on December shipments.

Lake shipbuilding is more active. Another large boat has been placed and the Oglebay-Norton Co. is inquiring for one for the ore trade.

Water shipments of Lake Superior iron ore are over. For the season they were 42,623,572 tons, compared with 59,036,705 tons last year, a falling off of about 28 per cent.

There is not the heavy buying of pig iron that has run through the past few weeks, but Chicago reports 40,000 tons, while the total for the Cleveland and Pittsburgh districts was about 80,000 tons. Alabama iron has advanced $1 to $19. Although the general demand has been less active, recent price advances are held. Several more blast furnaces are about to go in.

Expanding foundry operations are indicated both by repeat orders for pig iron and by an increase in foundry coke shipments.

The coke market has been quick to reflect the stronger pig iron situation. A Valley furnace interest has closed for 36,000 tons for first quarter at $3.75, as against $3.50 in the previous sale and $3.25 for the bulk of first quarter contracts. Since election day more than 1200 Connellsville district ovens have been lighted.

Both THE IRON AGE composite price figures are higher this week, pig iron going from $20.54 to $20.71 and finished steel from 2.517c. to 2.531c. per lb. Pig iron is now higher than it has been for six months, after being at the lowest, four weeks ago, in more than 30 months. Steel is at the highest point since July, after being at the year's lowest a month ago.

Pittsburgh

Heavy Specifications—General Conditions Very Favorable

PITTSBURGH, Dec. 2.—Demand for steel still feels the stimulus of the recent price advances and instead of the slowing down in furnace and mill operations common to December, it now looks as though the final month of the year would compare favorably in point of production with some of the earlier months of this year. There has been a real rush of specifications against unshipped tonnages entered at lower prices than now prevail and the November order record is one of the best of the year.

A very substantial gain over the previous month was made in practically all finished products. The least improvement has been in pipe, which having failed to

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Dec. 2, 1924	Nov. 25, 1924	Nov. 4, 1924	Dec. 4, 1923
No. 2X, Philadelphia‡	$23.76	$23.76	$21.76	$24.26
No. 2, Valley Furnace†	20.50	20.50	19.00	22.00
No. 2, Southern, Cin'ti†	**23.05**	22.05	21.55	25.05
No. 2, Birmingham, Ala.†	**19.00**	18.00	17.50	21.00
No. 2 foundry, Chicago*	21.50	21.50	20.50	23.00
Basic, del'd, eastern Pa.	**22.50**	21.50	20.00	22.75
Basic, Valley furnace	20.00	20.00	18.50	21.00
Valley Bessemer del. P'gh.	22.76	22.76	21.26	24.26
Malleable, Chicago*	21.50	21.50	20.50	23.00
Malleable, Valley	20.50	20.50	19.50	20.00
Gray forge, Pittsburgh	21.76	21.76	20.26	23.26
L. S. charcoal, Chicago	29.04	29.04	29.04	29.15
Ferromanganese, furnace	105.00	105.00	95.00	107.50
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	35.50	35.50	35.50	40.00
O.-h. billets, Pittsburgh	35.50	35.50	35.50	40.00
O.-h. sheet bars, P'gh	37.00	37.00	37.00	42.50
Forging billets, base, P'gh.	40.50	40.50	40.50	45.00
O.-h. billets, Phila	41.67	41.67	41.17	45.17
Wire rods, Pittsburgh	**48.00**	45.00	45.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.99	1.90	1.90	2.35
Light rails at mill	1.80	1.80	1.80	2.25
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Phila	2.32	2.32	2.32	2.67
Iron bars, Chicago	**2.05**	2.00	2.10	2.40
Steel bars, Pittsburgh	2.10	2.10	2.00	2.40
Steel bars, Chicago	2.10	2.10	2.00	2.50
Steel bars, New York	**2.44**	2.34	2.34	2.74
Tank plates, Pittsburgh	1.90	1.90	1.80	2.50
Tank plates, Chicago	2.20	2.20	2.10	2.60
Tank plates, New York	2.14	2.14	1.94	2.74
Beams, Pittsburgh	2.10	2.10	1.90	2.50
Beams, Chicago	2.20	2.20	2.10	2.60
Beams, New York	**2.34**	2.24	2.14	2.74
Steel hoops, Pittsburgh	2.50	2.50	2.50	3.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Dec. 2, 1924	Nov. 25, 1924	Nov. 4, 1924	Dec. 4, 1923
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.50	3.75
Sheets, black, No. 28, Chicago dist. mill	**3.70**	3.60	3.60	...
Sheets, galv., No. 28, P'gh.	4.60	4.60	4.60	4.85
Sheets, galv., No. 28, Chicago dist. mill	**4.85**	4.70	4.70	...
Sheets, blue, 9 & 10, P'gh.	2.70	2.70	2.70	3.00
Sheets, blue, 9 & 10, Chicago dist. mill	2.80	2.80	2.80	...
Wire nails, Pittsburgh	**2.85**	2.75	2.75	3.00
Wire nails, Chicago dist. mill	**2.95**	2.85	2.85	...
Plain wire, Pittsburgh	**2.60**	2.50	2.50	2.75
Plain wire, Chicago dist. mill	**2.70**	2.60	2.60	...
Barbed wire, galv., P'gh.	**3.65**	3.45	3.45	3.80
Barbed wire, galv., Chicago dist. mill	**3.65**	3.55	3.55	...
Tin plate, 100 lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	**$19.50**	$19.00	$18.00	$19.00
Carwheels, Philadelphia	19.00	19.00	17.50	19.50
Heavy steel scrap, P'gh.	20.00	20.00	19.00	18.50
Heavy steel scrap, Phila.	19.00	19.00	17.00	16.00
Heavy steel scrap, Ch'go	**17.75**	17.50	16.50	15.00
No. 1 cast, Pittsburgh	18.50	18.50	18.00	19.50
No. 1 cast, Philadelphia	18.50	18.50	17.50	20.00
No. 1 cast, Ch'go (net ton)	18.00	18.00	**17.50**	**19.50**
No. 1 RR. wrot. Phila.	19.00	19.00	18.00	18.00
No. 1 RR. wrot. Ch'go (net)	16.00	16.00	15.00	13.50
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	**$3.25**	$3.15	$3.00	$4.00
Foundry coke, prompt	4.25	4.25	4.00	5.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	**14.25**	14.00	13.50	13.25
Electrolytic copper, refinery	**13.87½**	13.75	13.37½	12.87½
Zinc, St. Louis	**7.10**	6.85	6.55	6.35
Zinc, New York	**7.45**	7.20	6.90	6.70
Lead, St. Louis	8.60	8.60	**8.87½**	7.00
Lead, New York	9.00	9.00	8.90	7.10
Tin (Straits), New York	**55.12½**	54.25	53.50	47.25
Antimony (Asiatic), N. Y.	14.25	14.50	12.00	8.75

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market report on other pages.

THE IRON AGE Composite Prices

Dec. 2, 1924, Finished Steel, 2.531c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

Nov. 25, 1924,	2.517c.
Nov. 3, 1924,	2.460c.
Dec. 4, 1923	2.775c.
10-year pre-war average,	1.689c.

Dec. 2, 1924, Pig Iron, $20.71 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

Nov. 25, 1924,	$20.54
Nov. 3, 1924,	19.21
Dec. 4, 1923	21.88
10-year pre-war average,	15.72

1924 to Date			1923		
High	Low		High	Low	
2.789c., Jan. 15	2.460c., Oct. 14	Finished Steel	2.824c., April 24	2.446c., Jan. 2	
$22.88, Feb. 26	$19.21, Nov. 3	Pig Iron	$30.86, March 20	$20.77, Nov. 20	

go off in price during the general decline over the middle of the year, does not promise to be higher in the near future, and naturally there is not the incentive to brisk buying there is in the other lines which went down and then advanced.

Wire products now are well established at the higher prices recently announced by the leading producers and adopted by independent producers after they had given their customers ample time to cover. Sheet prices below those recently announced by the American Sheet & Tin Plate Co. have not yet disappeared and the market in that product still shows a variation in prices. The American Steel & Wire Co., in advancing wire products $2 a ton, made a similar advance in screw stock bars, and, effective Dec. 3, independent manufacturers in this district are generally making a like advance to 2.80c. base, f.o.b. Pittsburgh district mills. New prices on the heavy tonnage products have not yet been seriously tested, but on such business as has been done the higher quotations have prevailed. Revised prices on strips are becoming better established as mills fill up and become fairly independent in respect to additional business. Bolt, nut and rivet makers will open their books for first quarter contracts late this week. Indications are that present prices will be continued.

With fuller order books than they have had before in nine or ten months, the steel manufacturers are increasing operating schedules with considerable confidence. Steel ingot capacity now is being operated at

very close to 75 per cent in this and nearby districts, as compared with about 60 per cent in the fore part of last month. Six more steel works furnaces are in production now than one month ago and several others are being made ready for early operations. In spite of this rapid gain, however, there is no sign that the manufacturers are anticipating the future. Capacity generally is put on only when the orders warrant. The idea is that steady operation of capacity throughout 1925 between 75 and 85 per cent will prove more profitable than full operation for a brief period and then a long stretch of low production, as was the case this year.

The pig iron market shows firmness but not much activity, since practically all of the large melters covered against their first quarter requirements before the recent price advance.

The coke market has been quick to reflect the stronger pig iron situation, and has moved up 25c. a ton more on furnace grade for first quarter shipment. More than 1200 ovens in the Connellsville district have been lighted since election day, but the increase in production has not exceeded that in consumption, and the market also is stronger on spot tonnages of furnace fuel.

Interest in scrap is low, but this has been attended by no weakening in prices.

Pig Iron.—Trading still reflects the well-covered position of buyers in this district; producers, however, are well supplied with business for the next three to four months and have firm price ideas, especially in view of the fact that the coke market is tending higher and with enlarged operations in the Connellsville district the possibility becomes stronger that fuel supplies will become more costly as a result of wage increases that independent operators may find it necessary to make to secure sufficient labor. This exigency has been written into the coke contracts and there is no escape for the pig iron producers in the event the wages are raised. Westinghouse Electric & Mfg. Co. in the past week has closed against its first half of 1925 requirements of foundry iron. This business was rather widely distributed among the producers and evidently was placed upon a reciprocal basis since some of those who made the lowest prices failed to get a share of the tonnage. Prices ranged all the way from $20 to $22, Valley furnace, for No. 2 grade. The higher price, however, is hardly representative of the general market, because it was paid for a brand which the company felt it must have. Lower quotations represented those made before the market moved upward and had not been withdrawn. In a general way, other business has been at the prices of a week ago. In the table captioned "A Comparison of Prices," in last week's issue of THE IRON AGE, Valley Bessemer iron, delivered Pittsburgh, should have read $22.76, instead of $22.26. W. P. Snyder & Co. make the average price of basic iron from Valley furnaces for November $19.68, as against $16.50 in October, and of Bessemer $20.32 against $20 the month before.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$20.00 to $20.50
Bessemer	21.00
Gray forge	20.00 to 20.50
No. 2 foundry	20.50 to 21.00
No. 3 foundry	20.00 to 20.50
Malleable	20.50 to 21.00
Low phosphorus, copper free	28.00 to 29.00

Ferroalloys.—Generally this market is stronger, with sales of very fair size of ferromanganese, both domestic and foreign, noted at the full prices of $105, Atlantic seaboard, while the 1925 price of $82.50, delivered, for 50 per cent ferrosilicon, has prevailed in such business as has been booked. Makers of the latter material are very firm at the new price for 1925 shipments and all are holding firmly to $75 on deliveries over the remainder of this year. The 1925 price represents an advance of $7.50 to $10 a ton over this year's price, which ranged from $75 down to $72.50, while in the last few months, on spot sales, the market has been as low as $69. The increase in steel works operations in the past few weeks has caused a revision of the probable requirements of ferromanganese over the next few months and some of the Youngstown district producers, who thought they had sufficient supplies, have been buyers in the past week at the full price. Spiegeleisen prices have not caught the stride of the other alloys, although there is a very steady demand. Prices are given on page 1507.

Semi-Finished Steel.—Rising tendency of finished steel prices has given the market for semi-finished steel more stability than it had a short time ago and it now looks as though present prices will be the bottom for the next few months. Some producers believe that the advances in sheets, bars and strips entitle them to some advance over present prices for first quarter tonnages, but the nonintegrated manufacturers take the position that since they will not benefit appreciably from the higher finished prices until well into the first quarter of the new year, they should not be called upon to pay any more money for their steel. Makers of wire rods have given their customers generous protection at the old prices and all have moved to the higher prices recently announced by the American Steel & Wire Co. of $48, base, Pittsburgh or Cleveland, and $50, Chicago district mills. There is no evidence that less than $48, base, now can be done here. There is not enough business in skelp to prove prices, but 2c. is the more common asking price. Ingot production in this and nearby districts still is rising and has crossed the 70 per cent mark, under a wave of specifications against old orders, which might have been allowed to lapse if it had not been for the recent price advances. Prices are given on page 1507.

Wire Products.—Independent manufacturers have generally followed the advance recently announced by the American Steel & Wire Co., and the market now is quotable squarely at the new prices, although they have not yet found much basis in sales. The mills, however, gave their customers ample opportunity to fill up before the advance and now are so well supplied with orders that they can afford to be independent of additional business for the next 60 days at least. Prices are given on page 1506.

Rails and Track Equipment.—The Baltimore & Ohio Railroad has divided an order for 2,000,000 tie plates among four makers, some of the business coming to local makers. This is the outstanding order of the past week, but demand for spikes and other rail supplies is gaining as the year wanes. Prices are well held on these lines. Light rails are not moving with any considerable freedom, but pressure to sell is less than it was recently, as makers assert that present prices are unprofitable. Prices are given on page 1506.

Steel Chain.—One large producer that failed to go along with the advance of several months ago from 6c., base, for 1-in. proof coil, to 6.25c., effective Dec. 1, has made the change and the market now is quotable at the single base price of 6.25c.

Bolts, Nuts and Rivets.—Makers are expecting to open their books later this week for first quarter 1925 business, and it is believed that present quotations will be continued. As buyers have not specified very fully against fourth quarter contracts, an advance would only bring out specifications and it would be some time before manufacturers would benefit. Discounts and prices are given on page 1507.

Sheets.—While a number of independent manufacturers have revised prices upward in keeping with the first quarter prices announced last week by the American Sheet & Tin Plate Co., operators of a considerable percentage of the capacity still are taking business at former prices and a double range of quotations remains necessary to properly picture the price situation. Black sheets still can be had at 3.50c., base, galvanized, and 4.60c., base, and blue annealed at 2.60c., base. One independent producer is reported to have withdrawn all quotations on galvanized sheets, presumably to get a line on how it stands in respect to its ability to make future shipments. The American Sheet & Tin Plate Co. is very heavily booked on blue annealed sheets and will soon start its only idle jobbing mill, which is at its Gary works. General sheet business is good. November business of the leading individual producer

ran about 15 per cent in excess of full capacity and as production was less rather than more than 75 per cent, a fair-sized backlog was accumulated. Recent bookings by independent companies have been running at above 110 per cent of capacity. Current mill operations of the sheet industry as a whole average slightly more than 75 per cent of capacity. Prices are given on page 1506.

Tin Plate.—January and February are rarely months of big consumption of tin plate and specifications for deliveries in those months are not particularly heavy. Big can companies are specifying fairly freely for January and are expected to place their first half requirements in the next few days. Common expectation is that 1925 will be a good year in tin plate, because the container manufacturers are going into the new year with much smaller inventories than a year ago and there is the expectation that the weather will be more favorable to a good yield of packing crops than was this year. The American Sheet & Tin Plate Co. has taken 61,000 boxes for export to Italy and 41,000 boxes for South American shipment. The export price on tin plate, not including Canada, holds right around $5.10 per base box, Pittsburgh.

Iron and Steel Bars.—The recent advance in prices of steel bars has strongly stimulated specifications against old contracts, and mills in this district not only are very fully engaged, but the prospect is that they will continue so even with a falling off in business for the next 60 days at least. The new price of 2.10c., base Pittsburgh, is not yet being seriously tested by buyers, but such business as has been done has been at that price. There is a good business in iron bars at unchanged prices. Prices are given on page 1506.

Structural Material.—Mills in this district are holding firmly to 2.10c., base, for large structural beams, and while that price as yet has found little basis in sales, manufacturers are not disposed to shade it, since structural awards are running heavy for this time of year, and this means specifications against the tonnages placed at lower figures, and also a good operation of structural mills. Bookings through the local district office of the American Bridge Co. in the past week exceeded 10,000 tons. The advance in steel has made investors a little anxious to get under cover on projected work in the fear that present prices for fabricated steel may not continue much longer. Just now they are very favorable to buyers because the structural shops are anxious to line up as much winter work as possible. Plain material prices are given on page 1506.

Plates.—None of the mills in this and nearby districts now are disposed to entertain bids at less than 1.90c., base Pittsburgh, on plates, and on recent business that has been the prevailing figure. In a few instances where small tonnages were involved, as much as 2c., base Pittsburgh, was done. Demand for this product still is moderate as compared with most other finished lines, but unlike the situation in the East, there are no plate makers here who do not also produce other lines, and as the other lines are doing well, there is an increasing tendency to get a price for plates that shows a profit. Prices are given on page 1506.

Tubular Goods.—The story is much the same as it has been for the past few weeks. Merchant pipe, particularly in the butt welded sizes, is doing well in point of sales, but there is not much activity in lap welded goods, either merchant or for use in the oil fields. The close proximity of the inventory period is something of a factor in the demand for pipe.

Cold-Finished Steel Bars and Shafting.—The American Steel & Wire Co., in its Nov. 19 price revision, advanced screw stock bars to 2.85c., base, at Cleveland, and 3c. at Worcester, Mass., but failure of the independent companies to go along made it necessary for the company to continue to take business at the former basis of 2.75c. and 2.90c. respectively. Independent producers have been disposed to wait until hot-rolled bars become more firmly established at the recent advance and since that now appears accomplished they have advanced effective Dec. 3 to 2.80c., base, Pittsburgh, for carload lots. Ground shafting still is priced at 3.10c., base, f.o.b. mill, for lots of a carload or more. Prices are given on page 1506.

Hot-Rolled Flats.—While there still is some irregularity in prices, the market gradually is becoming firmer, due to the fact that November business with all producers showed a very substantial gain over that for October and while there is still much open capacity, particularly for tonnages for delivery between Dec. 15 and Jan. 15, makers are much better filled up now than they have been before since the early part of the year. Some producers report a gain in November business over that of October as much as 75 per cent while a 50 per cent gain appears to have been a fairly common experience. Prices are given on page 1506.

Cold-Rolled Strips.—Most makers are holding firmly to 4.15c., base, for first quarter tonnages and do not find a great deal of resistance on the part of buyers to this price, which is $3 per ton above that for the current quarter. Some buyers have succeeded in getting producers to enter a good deal of business at 4c., base, for specification next year, but it is probable that a portion of the business will become an obligation against production in the first quarter of next year. The market cannot yet be quoted squarely at 4.15c., base, since 4c. still can be done, particularly on tonnages that are attractive from a mill standpoint.

Coke and Coal.—Prices have stiffened again since a week ago on both spot and contract furnace coke. A Valley furnace interest has closed for first quarter for about 12,000 tons a month at $3.75 at ovens, which compares with $3.50, the previous sale, and $3.25, at which most contracts were written. All contracts carry the wage scale clause, which means an advance in case the producers have to raise wages in order to secure men. The spot market now is quotable at $3.25, the minimum, and offerings at that price are not heavy. Some high sulphur furnace coke has been sold as high as $3.50. An inquiry from a steel company, ordinarily self contained, for 15,000 tons a month for first quarter shipment, gives producers further encouragement in seeking higher prices. It is now estimated that contracts involving about 150,000 tons a month for first quarter have been booked. This means increased production, and with the steel companies in the Connellsville district also enlarging mine and oven operations, there are fears that sufficient labor will be hard to secure. Spot foundry coke no longer appears to be obtainable at less than $4.50 per net ton at ovens, while first quarter and first half contracts carry prices all the way from $5 to $6. The coal market has grown slightly stronger on coking grade under a better demand and slack coal commands slightly higher prices because of lighter supplies, but the general coal market still is best described as being favorable to buyers owing to ample supplies.

Old Material.—This market has gone through a quiet week, as recent buyers appear to have covered their immediate requirements and there have not been others to take their places. Very little change has taken place in prices as a result of the slowing down in the demand, because current offerings are not large and dealers with yard holdings are not disposed to let go at present prices.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel	$20.00 to $21.00
No. 1 cast, cupola size	18.50 to 18.75
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	20.00 to 21.00
Compressed sheet steel	18.50
Bundled sheets, sides and ends	17.50
Railroad knuckles and couplers	21.50 to 22.00
Railroad coil and leaf springs	21.50 to 22.00
Low phosphorus blooms and billet ends	24.00 to 25.00
Low phosphorus plate and other material	23.00 to 24.00
Railroad malleable	19.00 to 20.00
Steel car axles	21.50 to 22.00
Cast iron wheels	19.00 to 19.50
Rolled steel wheels	21.50 to 22.00
Machine shop turnings	16.50 to 17.00
Sheet bar crops	21.50 to 22.00
Heavy steel axle turnings	17.00 to 17.50
Short mixed borings and turnings	14.50 to 15.00
Heavy breakable cast	17.50 to 18.00
Stove plate	16.00 to 16.50
Cast iron borings	16.50 to 17.00
No. 1 railroad wrought	17.00 to 18.00
No. 2 railroad wrought	20.00 to 21.00

Chicago

Evidence of Increased Consumption—Buying Not So Active

CHICAGO, Dec. 2.—The buying movement in pig iron and the heavier forms of finished steel has subsided following the placement of an unusually heavy tonnage of material. Buyers of heavy steel covered most of their first quarter requirements at prices current before the recent advances. To a less extent pig iron users are protected through the next four months. The newest development in the market is to be found in increasing evidences of heavier consumption. Specifications of a leading local mill have shown the largest gain for any week since September. Expanding operations among foundries is indicated both by recent repeat orders for pig iron and an increase in foundry coke shipments. Heavier consumption, of course, is the best augury for the stability of advanced prices; in fact, a continued trend in that direction will force the purchase of additional supplies, thereby paving the way for further advances. In the meantime, however, it would appear that the upward movement of prices has come to a halt. The latest advances in sheets and wire products drove in a heavy volume of business and are now generally established.

The two basic economic factors which have undergone a marked change for the better since midsummer are railroad and farmer buying. The sharp advances in the grain market account for the improved position of agriculture, while the recent election, by removing the fear of adverse legislation, has opened the way for purchases by the carriers commensurate with their better earnings. Car wheel manufacturers and other makers of railroad equipment are very busy. Orders for rolling stock promise to be an increasingly important influence on the operations of carbuilders and steel mills. The Missouri Pacific has entered the market for 3000 freight cars. The Burlington has put out an inquiry for 1000 cars and will ask for figures on 2000 additional before the close of the month. The Northern Pacific has added 1000 box cars to its pending inquiry for 800 gondola cars. The St. Louis Southwestern has revived an inquiry for 1000 box cars. The principal Eastern lines are also preparing large car programs. Purchases of track material continue heavy, orders for the week including 51,500 tons of rails placed by the Southern and 30,000 tons of fastenings bought by the Missouri Pacific. Blast furnace operations in this district remain unchanged and steel output ranges from 75 to 80 per cent. In fact, one important independent is running as full as raw material supplies permit. The reconstruction of the Gary blast furnace which was damaged by an explosion last August has been practically completed.

Pig Iron.—New buying during the past week may have aggregated 40,000 to 50,000 tons, but there is now a noticeable subsidence in market activity which, of course, is not a surprising development in view of large volume of business recently placed. The trade finds its greatest source of encouragement in numerous evidences of increasing melt. This is indicated by repeat orders for iron and by a noticeable betterment in foundry coke shipments. These changes are taking place gradually and there are as yet no characteristics of boom conditions. Melters have contracted conservatively for carefully calculated requirements, as their needs increase they are finding it necessary to enter the market again. Prices are firmly established at $21.50, base, local furnace, and no further advance is in immediate prospect. The advance to $22, base, furnace, by a steel works stack a week ago virtually amounted to a temporary withdrawal from the market. The position of Chicago furnaces has been further strengthened by advances at Detroit and Toledo to $22, thus putting the Chicago product back into competition in Michigan and other points east of here. Southern iron for all rail shipment has gone up to $19, base, Birmingham, while Southern for barge and rail delivery has advanced 50c. to $23.68, delivered Chicago.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$21.50
Northern No. 1 foundry, sil. 2.25 to 2.75	22.50
Malleable, not over 2.25 sil	21.50
Basic	21.50
High phosphorus	21.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (barge and rail)	23.68
Southern No. 2, sil. 1.75 to 2.25	25.01
Low phos., sil. 1 to 2 per cent, copper free	32.00
Silvery, sil. 8 per cent	35.29
Electric ferrosilicon, 14 to 16 per cent	42.92

Ferroalloys.—A large proportion of the users of 50 per cent ferrosilicon have contracted for their 1925 needs at $82.50, delivered. There have been a few sales of ferromanganese at $105, seaboard, and there is talk of another advance. Spiegeleisen is firm, but quiet.

We quote 80 per cent ferromanganese, $112.56, delivered; 50 per cent ferrosilicon, for 1925 delivery, $82.50, delivered; spiegeleisen, 18 to 22 per cent, $40.58, delivered.

Plates.—Little business has thus far been placed at the new prices, but this is not surprising in view of the heavy buying which preceded the advances. Specifications against commitments on mill books are heavy, however, and this is a most encouraging indication. In fact, the view is held in well informed quarters that many buyers who believe that they have covered their needs through the first quarter will find later that their calculations were too conservative. In support of this view is the growing importance of the railroads as both a direct and indirect influence on the market. No longer fearing adverse legislation, the carriers are planning additions and betterments commensurate with their improved earnings. In addition to the Southern Pacific, which is expected to buy 15,000 freight cars, the principal Eastern lines are preparing large rolling stock programs. In numerous other directions the expanding purchases of the railroads are making themselves felt. The International & Great Northern, for example, has placed 1200 tons of oil storage tanks with the Kansas City Structural Steel Co.

The mill quotation is 2.20c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Structural Material.—Fabricating awards for the week were numerous, but individually small, aggregating 7500 tons. Plans for the new market center for the South Water Street Removal Co., Chicago, have been revised, reducing the required steel to 10,000 tons which, however, will probably be awarded this week. Action on the Stevens Hotel Building, Chicago, 17,000 tons, is expected by Jan. 1. Other large local projects which will come to a head soon are the Congress Hotel addition and a proposed textile exchange building. On the Pacific Coast, bridges in connection with irrigation work at Merced, Cal., will involve 6000 tons.

The mill quotation on plain material is 2.20c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—Buyers of soft steel bars are covered through the first quarter and are specifying heavily. The decline to 2c., Chicago, on bar iron evidently accomplished its purpose and current going prices range from a minimum of 2.05c. to 2.15c. Even these prices are too low in comparison with costs and it is expected that further advances will be made as rapidly as backlogs are built up.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 2.05c. to 2.15c., Chicago; rail steel, 2c. to 2.10c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

Sheets.—The local independent, following the lead of the Steel Corporation subsidiary, has announced advances of $2 a ton on black and $3 on galvanized, leav-

ing the quotation on blue annealed unchanged. A large tonnage was booked at the old prices, some of it extending into first quarter.

Chicago delivered prices from mill are 3.75c. for No. 28 black, 2.85c. for No. 10 blue annealed, 4.90c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Wire Products.—Independents have followed the Steel Corporation subsidiary in advancing common products $2 a ton. A similar advance has been made on specialties used by manufacturing consumers. Bookings in both classes of products have been heavy. Operations of wire plants are estimated at 70 per cent of capacity. For mill prices see page 1506.

We quote warehouse prices fo.b. Chicago: No. 8 black annealed, $3.15 per 100 lb.; common wire nails, $3.25 per 100 lb.; cement coated nails, $2.55 per keg.

Rails and Track Supplies.—The Southern Railway has placed 51,500 tons of rails, of which 48,700 tons went to the Tennessee mill and 2800 tons to the Gary producer. The Missouri Pacific has divided 30,000 tons of tie plates, spikes and bolts between the Illinois Steel Co., the Inland Steel Co., the Colorado Fuel & Iron Co., the Scullin Steel Co. and the Tennessee Coal, Iron & Railroad Co.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 1.90c. to 2c., f.o.b. maker's mill.

Standard railroad spikes, 2.90c. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.45c. base, and track bolts, 4.45c. base.

Bolts and Nuts.—More liberal specifications are being received from the automobile and farm implement industries and heavy inquiries have been put out by the railroads. The Great Northern is in the market for 2,000 tons of nuts and 2,000,000 bolts. Sellers have not yet opened their books for first quarter but will probably do so soon at advanced quotations. For mill prices, see page 1507.

Jobbers quote structural rivets, 3.65c.; boiler rivets, 3.85c.; machine bolts up to ¾ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to ¾ x 4 in., 50 off; larger sizes, 50 off; hot pressed nuts, squared, tapped or blank, $3.50 off; hot pressed nuts, hexagon, tapped or blank, $4 off; coach or lag screws, 60 per cent off.

Cast Iron Pipe.—Detroit has awarded 600 tons of 12-in. to James B. Clow & Sons and 650 tons of the same diameter to the Lynchburg Foundry Co. Park Falls, Wis., has placed 225 tons with James B. Clow & Sons. Detroit takes bids Dec. 3 on 1000 tons of 6-in. and 1000 tons of 16-in. Jonesboro, Ill., will receive general contractors' figures Dec. 5 on 1620 tons of 4-, 6- and 8-in. Class B water pipe. Municipal work is still lagging, with going prices ranging from $38.50 to $39, base Birmingham, for 6-in. and larger. Private buying, however, is reviving. The United States Cast Iron Pipe & Foundry Co. has booked a total of 17,000 tons of gas pipe for the Detroit, Milwaukee and Grand Rapids gas companies.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $50.70 to $51.20; 6-in. and over, $46.70 to $47.20; Class A and gas pipe, $5 extra.

Hot-Rolled Strip.—That the automobile industry has definitely abandoned the practice of stocking cars ahead is indicated by reports for the month of October. The number and value of automobiles on hand at the close of that month was less than for the preceding month for the first time since July, 1923. At the same time wholesale sales showed an increase of 27 per cent in the number of cars and 26.4 in their value over October a year ago. Sales of hot strip are showing some improvement with prices unchanged at 2.50c., Chicago, for 10-in. and wider and 2.60c. for the narrower sizes.

Cold Finished Steel Bars and Shafting.—There now seems to be some doubt as to whether an advance will take place before Jan. 1. The effect of an advance at this time would be to drive in heavy specifications against outstanding contracts at the present price, thus burdening the mills with a great deal of cheap tonnage which they may not otherwise be forced to take. The ruling quotation remains 2.70c., f.o.b. Chicago mill.

Reinforcing Bars.—Demand has suffered a reaction following the heavy placements prior to recent price advances. Such a reaction was not unexpected, but is causing little concern in view of the large amount of work in prospect. Bond issues recently passed in Illinois, Missouri and Minnesota insure the carrying out of from 5 to 10-year programs for highway construction which will take large quantities of steel. In Iowa, Kansas and Oklahoma, where road construction is undertaken by the counties, there is also promise of greater activity. Locally, the Stevens Hotel Building, an old project which has been revived, is expected to come up for bids Jan. 1, approximately 2000 tons. It now develops that the new market center for provision merchants to be built by the South Water Street Removal Co., Chicago, has not yet been placed and will require close to 6000 tons of reinforcing. The Eitel Brothers Building, Chicago, 850 tons, has been awarded to the Concrete Steel Co. instead of to another fabricator as recently reported. Reinforcing steel for delivery from warehouse remains unchanged at 2.60c., Chicago.

Lettings include:

Eitel Brothers building, Chicago, 850 tons to Concrete Steel Co.

Illinois highway work, 350 tons, including 250 tons of bridges, to Concrete Steel Co.

Buehler Brothers warehouse building, Chicago, 140 tons to Barton Spiderweb System Co.

Sokol Slavsky, Bohemian Turner hall, Berwyn, Ill., 135 tons to Concrete Engineering Co.

Tust Warehouse, Chicago, 120 tons to Barton Spiderweb System Co.

Visitation Church, Detroit, 125 tons to McRae Steel Co.

Grand Riviera Theatre, Detroit, 110 tons to McRae Steel Co.

Gotfredson Body Corporation building, Detroit, 100 tons to McRae Steel Co.

Pending work includes:

St. Paul, Minn., Sections A and B of municipal sewer, 1700 tons, to be readvertised.

Jacksonville, Ill., hotel, Jarvis Hunt, Chicago, architect, 125 tons, readvertised.

Old Material.—Heavy melting has advanced to $18 delivered on purchases of fully 10,000 tons each by two important mills. Brokers have already paid an equal amount and have bid as high as $18.25 for some material. Purchases for delivery to a mill whose specifications are particularly liberal are still being made by dealers at $17.75. The market spread on this material, therefore, appears to have narrowed down to 25c.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$19.00 to $19.50
Cast iron car wheels	19.50 to 20.00
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	27.00 to 32.00
Forged steel car wheels	22.00 to 22.50
Railroad tires, charging box size	22.00 to 22.50
Railroad leaf springs, cut apart	22.00 to 22.50
Rails for rolling	19.00 to 19.50
Steel rails, less than 3 ft.	20.00 to 20.50
Heavy melting steel	17.75 to 18.00
Frogs, switches and guards cut apart	18.00 to 18.50
Shoveling steel	17.50 to 18.00
Drop forge flashings	13.00 to 13.50
Hydraulic compressed sheets	15.00 to 15.50
Axle turnings	16.00 to 16.50
Steel angle bars	18.50 to 19.00
Steel knuckles and couplers	22.00 to 22.50
Coil springs	22.50 to 23.00
Low phos. punchings	19.50 to 20.00
Machine shop turnings	11.00 to 11.50
Cast borings	13.25 to 13.75
Short shoveling turnings	13.25 to 13.75
Railroad malleable	19.50 to 20.00
Agricultural malleable	19.00 to 19.50
Per Net Ton	
Iron angle and splice bars	18.50 to 19.00
Iron arch bars and transoms	21.00 to 21.50
Iron car axles	27.00 to 27.50
Steel car axles	20.00 to 20.50
No. 1 busheling	14.50 to 15.00
No. 2 busheling	10.50 to 11.00
Pipes and flues	12.50 to 13.00
No. 1 railroad wrought	16.00 to 16.50
No. 2 railroad wrought	15.50 to 16.00
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	17.00 to 17.50
No. 1 agricultural cast	17.00 to 17.50
Locomotive tires, smooth	18.00 to 18.50
Stove plate	16.00 to 16.50
Grate bars	15.50 to 16.00
Brake shoes	15.50 to 16.00

New York

Buying of Pig Iron Declines, but Favorable Features Are Not Lacking

NEW YORK, Dec. 2.—Buying of pig iron has declined to a tonnage small in comparison with that of recent weeks, but this was to be expected, for the heavy buying movement could not continue indefinitely. The encouraging feature of the present situation is that a number of companies which had placed orders believed to be sufficient to meet requirements for the first quarter of the year have again appeared in the market asking for additional tonnages. One of these companies is the Thatcher Furnace Co., which is expected to buy from 3000 to 5000 tons of No. 2 plain and No. 2X for first quarter. A larger company sounded the market and decided not to buy for the present. Buyers as a rule are urging shipments and the indications are that the melt is slowly increasing. Prices have not changed since last week.

We quote delivered in the New York district as follows, having added to furnace price $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$24.77 to $25.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	25.77 to 26.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.02 to 25.52
Buffalo, sil. 1.75 to 2.25	26.91
No. 2 Virginia, sil. 1.75 to 2.25	30.44 to 31.44

Ferroalloys.—Sales of ferromanganese in the past week have totaled about 1000 tons at the full price of $105, seaboard basis. Inquiry is not voluminous and is largely confined to small carload lots. The spiegeleisen market is fairly active, although not so much so as in the past few weeks, during which several thousand tons changed hands.

Cast Iron Pipe.—Makers are well booked into the first month of next year. Activity of consumers of water pipe, seeking to cover for spring requirements in anticipation of advances in price as a result of the strong raw material market, is placing pipe makers in a highly satisfactory position, despite the fact that this is generally the beginning of the dull season. Makers of soil pipe are also well booked into January and in anticipation of a higher market next year are not seeking business at present discounts. We quote water pipe, per net ton, f.o.b. New York, in carload lots, as follows: $55.60 to $56.60; 4-in. and 5-in., $60.60 to $61.60; 3-in., $70.60 to $71.60, with $5 additional for Class A and gas pipe. Discounts of both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 42½ to 43¾ per cent off list; heavy, 52½ to 53¾ per cent off list.

Warehouse Business.—This is the season when warehouse business may be expected to fall off, but inquiries and orders are in good volume, and it may be said the outlook is satisfactory. Rumors are heard that sheet prices may go up following the rise in mill prices. One interest speaks of advancing next week. However, it is remembered how weak prices were in the pre-election period; conditions have given firmness to those levels, which now are generally regarded as about right. Reinforcing bars are very weak, but structural shapes are moving well for the season and bars are strong. Prices generally are firm, little shading is observed and changes in prices seem unlikely for a while. Prices are given on page 1528.

Finished Iron and Steel.—What the week has served to accent is the high degree of protection most large consumers possess in contracts and definite commitments which will bring them steel in numerous cases throughout the first quarter at the recently prevailing prices. The buyer has not ceased to bargain and even yet has been successful in making new purchases for December delivery at the former prices; though mill convenience may mean shipment in January. The volume of fresh purchasing to meet specific needs is in the total not great. Perhaps the more important development is an indication that buyers have overstayed, in that they are presenting specifications against contracts for prompter deliveries than the mills are commonly able to make. Where the purchaser has not been able to show a reason, he has paid the new prices. One finds bars bought at the basis of 2c. and 2.10c., Pittsburgh (though it is necessary to pay the higher price on all new orders), and galvanized sheets at 4.60c. and higher. It appears that some of the business offered as of December will really be January business, though in some lines, notably plates, it is still easy to get December shipment and in the case of plates at a basis of 1.80c., Pittsburgh. Buying of tin plate has been fully up to the volume of that of a year ago and large bookings mark the strip steel market. Meanwhile, much forward buying of a general character is not expected before the middle of January.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.44c.; plates, 2.14c. to 2.24c.; structural shapes, 2.44c.; bar iron, 2.34c.

Coke.—Furnace coke is firmer and some producers are asking as high as $3.75. Quotations on Connellsville foundry coke range from $4.25 to $5.50, ovens, and by-product coke is quoted $10.41, Jersey City and Newark.

Old Material.—The intense activity in certain grades noticeable a week ago as brokers offered higher prices to cover on old contracts has developed into a more normal condition with $19.50 to $20 per ton paid by consumers in eastern Pennsylvania on No. 1 heavy melting steel and brokers offering $19 to $19.50 delivered. For consumers with a low freight rate from New York, $18 per ton is offered. Chemical borings are strong at $19 to $19.50 per ton delivered, the price offered depending upon the freight rate to consumer's plant. Machine shop turnings are going forward to consumers in Harrisburg, Pa., at $15 per ton delivered and to Phoenixville at $16 per ton delivered. Specification pipe is firm at a buying price of $17 per ton delivered eastern Pennsylvania and as high as $17.50 per ton is reported to have been paid. Stove plate is being purchased at $15 per ton delivered to a local consumer with a $2.02 freight rate and $15 is also offered by a Connecticut consumer with a $2.50 rate. To eastern Pennsylvania consumers $15.50 per ton is offered on stove plate. No. 1 machinery cast delivered to local foundries in New York and Brooklyn is firm at $17 to $17.50 per ton.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$14.00 to $14.50
Heavy melting steel, railroad or equivalent	15.25 to 15.75
Rails for rolling	15.50 to 16.00
Relaying rails, nominal	24.00 to 25.00
Steel car axles	19.50 to 20.00
Iron car axles	26.00 to 28.00
No. 1 railroad wrought	15.00 to 15.50
Forge fire	11.00 to 11.50
No. 1 yard wrought, long	14.00 to 14.50
Cast borings (steel mill)	10.75 to 11.25
Cast borings (chemical)	16.00 to 17.00
Machine shop turnings	11.50 to 12.50
Mixed borings and turnings	10.00 to 10.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	13.25 to 13.75
Stove plate	12.50 to 13.00
Locomotive grate bars	12.50 to 13.00
Malleable cast (railroad)	14.00 to 14.50
Cast iron car wheels	15.00 to 16.00
No. 1 heavy breakable cast	13.00 to 13.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$17.00 to $17.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	14.00 to 14.50

The Farrell, Pa., works of the Carnegie Steel Co. has been awarded the bronze safety trophy for October, the fifth time during the present year that plant has won the cup. It is expected that the Farrell works will be given permanent possession of the trophy because of the record established during the year. The 1923 cup was won also by the Farrell plant.

An office executives' conference will be held under the auspices of the American Management Association at the Metropolitan Life Insurance Co. building, eleventh floor, 1 Madison Avenue, New York, on Dec. 11 and 12. Papers are scheduled to cover such office problems as salary standardization, employee training and standardization of office equipment.

St. Louis

Railroads Buy Track Fastenings—Local Furnace Well Supplied with Orders

ST. LOUIS, Dec. 2.—A month of heavy selling has resulted in the St. Louis Coke & Iron Co. disposing of its output of pig iron for the remainder of the year and has put it in a comfortable position as far as first quarter is concerned. Following the sale of 25,000 tons during the last week, the company advanced its price to $23 to $23.50, f.o.b. Granite City. Of its sales made last week, 10,000 tons of basic is for December shipment to an East Side melter, and 15,000 tons of foundry iron in lots up to 3000 tons are about equally divided between current shipments and first quarter. The Sloss-Sheffield company sold 5000 tons of foundry grades for shipment in first quarter by water and rail. Three of the large Southern makers are now out of the market, and the price of Southern iron has advanced to $19 to $19.50, Birmingham. The market for Northern iron is strong at $21 to $21.50. A Southern maker sold 1000 tons to a job foundry. An Iowa melter is in the market for 700 to 1000 tons of foundry iron, but there are few other sizable inquiries. Considerable iron is yet to be sold for first quarter delivery. The melt in the district is reported to be steadily on the increase, and there is a better feeling in the trade. The Federal Reserve Bank of St. Louis reports that in the Eighth Federal Reserve district October sales of stove manufacturers, seven reporting, were 2 per cent larger than October, 1923, and 4 per cent in excess of the total for September, 1924; farm implements, six reporting, decreased 5.2 per cent under October, 1923, but gained 13.4 per cent over September, 1924; job foundries, five reporting, decreased 6 per cent under October, 1923, and 1.1 per cent under September, 1924; manufacturers of boilers, stacks, elevators, wire rope, etc., 14 reporting, decreased 0.5 per cent under October, 1923, and gained 32.6 per cent over September, 1924.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$23.16 to $23.66
Northern malleable, sil. 1.75 to 2.25	23.16 to 23.66
Basic	23.16 to 23.66
Southern fdy., sil. 1.75 to 2.25 (rail)	24.17 to 24.67
Southern fdy., sil. 1.75 to 2.25 (rail and water)	22.28 to 22.78
Granite City iron, sil. 1.75 to 2.25	23.81 to 24.31

Coke.—There is only a fair demand for industrial grades of coke, and consumers are still buying for their immediate requirements of by-product producers in the district. The weather has been colder, but not sufficiently so to cause heavy buying of domestic grades.

Finished Iron and Steel.—Heavy railroad orders featured the week in finished iron and steel, the Wabash Railway buying 1,000,000 tie plates, 8000 kegs of track spikes and 2000 kegs of bolts from the Illinois Steel Co. and the Inland Steel Co. for first half delivery. The Missouri Pacific awarded the contract for its first half requirements of similar track accessories to the Illinois Steel Co., Inland Steel Co. and Kansas City Bolt & Nut Co., but quantities have not been specified. The Missouri-Kansas-Texas Railway bought 850 tons of structural steel for car repair work from Illinois Steel Co. The steel trade is taking an interest in the revival by the St. Louis Southwestern Railway of an inquiry for 1000 box cars, which was first issued Aug. 18 and later withdrawn. Warehouses in this district are buying heavily before an anticipated price advance, but with the hope that the mills will be making deliveries over a long period. All lines are in demand, with sheets the least wanted. Road projects in Illinois and Missouri soon to be undertaken add interest to the bar trade. The Laclede Steel Co. got the contracts for 80 tons of bars for the retaining walls of the new main Bell Telephone Building and 125 tons for a branch at Grand Boulevard and Botanical Avenue. Other reinforcing bar jobs pending include Nurses' Home in Barnes Hospital Group, St. Louis, 200 tons; waterworks at Springfield, Ill., 600 tons, and several apartment houses in St. Louis, including 100 tons, for one at Skinker Boulevard and Southwest Avenue. Warehouse business was not so good the last week as it has been.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled one pass, 5c.; cold-rolled rounds, shafting and screw stock, 4.15c.; structural rivets, 3.90c.; boiler rivets, 4.10c.; tank rivets, ¾-in. and smaller, 60 per cent off list; machine bolts, 55 and 5 per cent; carriage bolts, 40 and 5 per cent; lag screws, 60 and 5 per cent; hot pressed nuts, squares or hexagons, blank or tapped, $3.50 off list.

Old Material.—The demand for rolling mill grades is strong and there is still a small short interest among dealers who made recent heavy sales. Prices on some items are higher. One large dealer interest is reported to be engaged in an attempt to bear the market on steel grades following a sale of some proportions to a leading melter. The sale of 1000 tons of rails for rolling at $19.50 is reported. Railroad lists issued during the week include: Mobile & Ohio, 2500 tons; Union Pacific, 1100 tons; Chicago, Milwaukee & St. Paul, 900 tons; Pennsylvania System, 42,000 tons; St. Louis & San Francisco, 1200 tons, and Chicago, Cleveland, Cincinnati & St. Louis, blind list.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$18.00 to $18.50
Rails for rolling	18.50 to 19.00
Steel rails, less than 3 ft.	19.00 to 19.50
Relaying rails, 60 lb. and under	25.00 to 26.00
Relaying rails, 70 lb. and over	32.50 to 33.50
Cast iron car wheels	18.50 to 19.00
Heavy melting steel	16.25 to 16.75
Heavy shoveling steel	16.00 to 16.50
Frogs, switches and guards cut apart	17.50 to 18.00
Railroad springs	20.00 to 20.50
Heavy axles and tire turnings	12.50 to 13.00
No. 1 locomotive tires	18.00 to 18.50
Per Net Ton	
Steel angle bars	15.50 to 16.00
Steel car axles	20.00 to 20.50
Iron car axles	24.00 to 24.50
Wrought iron bars and transoms	19.50 to 20.00
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	14.25 to 14.75
Cast iron borings	10.75 to 11.25
No. 1 busheling	14.50 to 15.00
No. 1 railroad cast	17.00 to 17.50
No. 1 machinery cast	18.50 to 19.00
Railroad malleable	14.50 to 15.00
Machine shop turnings	8.00 to 8.50
Champion bundled sheets	10.00 to 10.50

Buffalo

Sharp Decrease in Demand for Pig Iron Following Price Advances

BUFFALO, Dec. 2.—Stiffening pig iron prices have made the demand slump. The total inquiry has thinned out to 5000 tons in all. In this is a 900-ton inquiry for first quarter from Gilbert & Barker, New England pump-making concern. Another inquiry is for 800 tons, two for 500 tons each and one for 400 tons. Placement has been lighter but furnaces with the last quarter sold and the first quarter capacity well taken are content to go along with moderate business. The price structure is firm with a disposition to pull away from the $22 base. One furnace only is now quoting on the $22 base for first quarter. The others are on $22.50 to $23 base, though $23 business is scarce and more is being sold at $22 to $22.50. One maker adheres to a $23 base for last quarter and a $22 base for first quarter, and states that it will not give ground even on differentials. The Lackawanna-Bethlehem plant has lighted a sixth stack.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25	$22.00 to $23.00
No. 1 foundry, sil. 2.75 to 3.25	23.50 to 24.50
No. 2 foundry, sil. 2.25 to 2.75	22.50 to 23.50
Malleable, sil. up to 2.25	22.00 to 23.00
Basic	22.00 to 23.00
Lake Superior charcoal	29.23

Finished Iron and Steel.—Recently-advanced prices continue firm. Bars have been priced at 2.10c. by Pittsburgh makers selling in this territory, following recent

increases to approximating figures by Buffalo mills. The same price applies to shapes, and sheets are firmer. One interest selling in this territory has advanced its black sheet quotation to 3.60c. and its galvanized quotation to 4.75c. Under pressure of good tonnage, this price has been shaded by other concerns, a 600-ton inquiry for black sheets during the week having brought out 3.40c. A reinforcing bar maker has taken 275 tons for a filtration plant at Buffalo and 200 tons for a Buffalo school. Warehouse prices are strong. Fabricating business has fallen off with the advent of colder weather.

Steel bars, 3.30c.; iron bars, 3.35c.; reinforcing bars, 3.30c.; structural shapes, 3.40c.; plates, 3.40c.; No. 10 blue sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanizer sheets, 5.85c.; bands, 4.05c.; hoops, 4.40c.; cold-finished rounds, 4.20c.; cold-finished shapes, 4.70c.

Old Material.—Mills here have covered for their scrap requirements till about the end of January, it is estimated, though some small buying is being done right along. The prices remain firm at the higher points they reached during the recent purchasing, and there is no sign of weakening in any commodity. Heavy melting steel ruling price is $18 to $19, though all one of the mills will offer is about $17.50. On the other hand, dealers will pay as high as $18.50 for select scrap destined for mills requiring a high grade of material. Hydraulic compressed sheets and No. 1 busheling are firm, with considerable buying having been done in both grades during the past two weeks. The prices of these grades are about $1 to $1.50 less than heavy melting steel. The cast demand is better, but it does not approximate the demand for some of the other grades.

We quote f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$18.00 to $19.00
Low phosphorus, 0.04 and under	20.50 to 21.00
No. 1 railroad wrought	16.50 to 17.00
Car wheels	17.50 to 18.00
Machine shop turnings	13.50 to 14.00
Cast iron borings	13.50 to 14.00
No. 1 busheling	17.50 to 18.00
Stove plate	15.50 to 16.50
Grate bars	14.50 to 15.00
Bundled sheets	12.50 to 13.00
Hydraulic compressed	17.50 to 18.00
Railroad malleable	17.50 to 18.00
No. 1 machinery cast	18.00 to 18.50

Boston

Buying of Pig Iron Slows Down While That of Old Material Increases

BOSTON, Dec. 2.—A perceptible slowing down in buying, a shrinkage in new inquiries to within striking distance of the zero mark, and the maintenance of prices in the face of trade conditions, are the outstanding features of the pig iron market. The largest sale reported is one of 900 tons of No. 1X York State iron to a Massachusetts tank manufacturer at a delivered price slightly under Buffalo. Otherwise business is confined to small tonnages of eastern and western Pennsylvania, Buffalo, Virginia and York State iron. Nothing has developed in the foreign iron situation. The buying movement, which started early in November, therefore lasted about a month, reaching its peak during the third week. It was based on a belief that prices would advance, and not, generally, on forward business booked by foundries. In a number of instances, while making new contracts foundries held up shipments on old ones. The melt of iron in New England has increased little, if any, since the national election. On the present general ratio of melt, most important foundries have sufficient iron to carry them through the first quarter, 1925.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 to $5.92 from western Pennsylvania; $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.65 to $26.65
East. Penn., sil. 2.25 to 2.75	26.15 to 27.15
West. Penn., sil. 1.75 to 2.25	25.92 to 26.91
West. Penn., sil. 2.25 to 2.75	25.92 to 27.91
Buffalo, sil. 1.75 to 2.25	26.91 to 27.91
Buffalo, sil. 2.25 to 2.75	27.91 to 28.91
Virginia, sil. 1.75 to 2.25	29.42 to 29.92
Virginia, sil. 2.25 to 2.75	29.92 to 30.42
Alabama, sil. 1.75 to 2.25	28.10 to 28.60
Alabama, sil. 2.25 to 2.75	28.60 to 29.15

Warehouse Business.—Warehouse prices on iron and steel remain unchanged notwithstanding the stiffening in mill prices. The movement out of stock continues to show a slight improvement each month. Wire nails have been advanced 10c. a keg to $3.90 base. Other wire products have been marked up to the following bases: barbed wire, two-ply twisted, 80-rod reels, $3.73 per reel, 4-point, $4.30 per reel; galvanized fence wire, No. 9, $4.05 per 100 lb.; fence staples, full kegs, $5 per 100 lb.

Finished Material.—With the advent of cold weather there has been a drop in fabricated steel prospects. A quiet spell is expected until well after the turn of the new year. The largest mills quote shapes at $2.46½ per 100 lb. delivered Boston, freight allowed, equivalent to 2.10c., Pittsburgh, but independent mills openly quote $2.36½ delivered, or 2c. Pittsburgh base. Most mills quote plates at $2.16½ per 100 lb. delivered or 1.80c. Pittsburgh base, but $2.11½ delivered or 1.75c. Pittsburgh base can be done. Bars hold firm at $2.46½ per 100 lb. delivered, or 2.10c. Pittsburgh base. While mills booked more plate, shape and bar business in November than in October, consumers and warehouse interests are still confining purchases to the smallest possible tonnages. Wire nails have been advanced 10c. a keg to $3.191 delivered Boston, equivalent to $2.80 Pittsburgh base.

Coke.—Both the Providence Gas Co. and the New England Coal & Coke Co. announce that the prevailing prices on 1924 by-product foundry coke, December shipments, is $11.50 a ton delivered in New England, unchanged from the November price. November shipments on contracts were slightly in excess of those for October. October shipments were 50 per cent larger than September, consequently business is forging ahead slowly.

Old Material.—While pig iron sales have dropped off, those of old material have increased. More scrap is moving out of New England to eastern Pennsylvania and the Pittsburgh district than in any previous time since last February. The market for heavy melting steel has again taken a $1 spread, $14 to $15, but 65 to 70 per cent of current sales are at $14.50 to $15. Chemical borings are in urgent demand and easily $1.25 a ton higher. Rolling mill borings are $1 higher in sympathy. Early in the week machine shop turnings sold at $10.60 on cars. Today, $11.25 to $11.75 is the market. Mixed borings and turnings brought $10.25 within a day or two. Bundled skeleton has sold at $10.50 to $11 and at $11.50 to $12; and bundled cotton ties at $9 to $9.50, $10 to $10.25, and in one instance as high as $11; price depending on quality of material and requirements of consumer. For eastern Pennsylvania consumption, $20 is the going price on shafting, but less desirable material is considerably cheaper. Bids closed Dec. 3 for 28 cars of miscellaneous material offered by the General Electric Co., West Lynn, Mass.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$19.00 to $20.00
No. 2 machinery cast	17.00 to 18.00
Stove plates	15.00 to 15.50
Railroad malleable	17.50 to 18.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$14.00 to $15.00
No. 1 railroad wrought	13.50 to 14.00
No. 1 yard wrought	12.50 to 13.00
Wrought pipe (1-in. in diam., over 2 ft. long)	12.00 to 12.50
Machine shop turnings	11.25 to 11.75
Cast iron borings, chemical	14.25 to 14.75
Cast iron borings, rolling mill	10.50 to 11.00
Blast furnace borings and turnings	9.50 to 10.25
Forged scrap	10.50 to 11.00
Bundled skeleton	10.50 to 12.00
Bundled cotton ties	9.00 to 11.00
Forged flashings	11.50 to 12.00
Shafting	18.50 to 20.00
Street car axles	18.50 to 19.00
Rails for rerolling	15.00 to 15.50
Scrap rails	14.00 to 14.50

Work has been completed on a new two-story office and warehouse at 5938 Linsdale Avenue, Detroit, by the Link-Belt Co., Chicago.

Cincinnati

Buying of Pig Iron Declines—Higher Quotations at Birmingham

CINCINNATI, Dec. 2.—The buying movement in pig iron has subsided for the time being and last week sales generally were for small tonnages for immediate needs, though occasional sales of 100 to 200 tons for first quarter were made. Prices are firm, the market in southern Ohio being quoted at $21.50 to $22, Ironton, with a possibility of the lower figure disappearing in the next few days. In the Alabama and Tennessee districts, the lowest quotation available today is $19 base, Birmingham, for all deliveries and sales during the past week were made at this figure. Three Alabama furnaces have withdrawn from the market temporarily, while one is quoting $19.50 for prompt shipment. There was some activity in special grades, one sale being for 600 tons of low phosphorus to a Dayton steel foundry. Sales of one and two carload lots of silvery iron were made at prices ranging from $29.50 to $30.50 for 8 per cent at Jackson County furnaces. There was no activity in Bessemer or charcoal grades, and the inquiry of the Andrews Steel Co. for 20,000 tons of basic has not been closed as far as reported.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern fdy., sil. 1.75 to 2.25 (base)	$23.05
Southern fdy., sil. 2.25 to 2.75	23.55
Southern Ohio silvery, 8 per cent	$31.77 to 32.77
Southern Ohio fdy., sil. 1.75 to 2.25	23.77 to 24.27
Southern Ohio, basic	23.27
Southern Ohio, malleable	23.77 to 24.27

Sheets.—Now that the leading interest has opened books for first quarter, the trade is better satisfied, and while specifications on December quotas are still coming in with a rush, there is not the same anxiety to place orders for first quarter. Sales are, however, satisfactory. Some mills are quoting as previously for December delivery, but others are asking full first quarter prices of 2.70c. for blue annealed, 3.60c. for black and 4.75c. for galvanized, for all deliveries.

Tin Plate.—Some good orders for first quarter and first half are reported to have been placed by manufacturers in this district following the opening of books at unchanged prices by producers.

Structural Activity.—A number of small projects are up for bids, but in general activity is light. A bus terminal at Indianapolis for which plans are being prepared will require 1100 tons. The Union Gas & Electric Co., Cincinnati, took bids on an addition to its plant at Fort Miami, 570 tons. An addition to the Tutweiler Hotel at Birmingham will take 500 tons. Fabricating prices are stiffening considerably, following higher prices for plain material asked by mills.

Reinforcing Bars.—Current demand runs largely to one and two carload lots. Bids are being taken on an addition to the Smith Bros. Hardware Co., Columbus, Ohio, reported last week as being steel frame construction, but it will be of concrete, 400 to 500 tons. A number of apartment and school buildings, held up under the Cincinnati zoning law, are expected to come out shortly. Bar prices are fairly steady at 2c. to 2.10c., mill, though on attractive tonnages it is probable that these prices can be shaded $1 per ton.

Warehouse Business.—There has been some increase in demand for wire products, and rolled products also are moving in good volume, despite the fact that the Thanksgiving holiday intervened. Prices are steady and unchanged, but it is reported that wire products may be advanced $2 per ton to bring them in line with mill quotations.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, $3.15 per 100 lb.; common wire nails, $3.15 per keg base; cement coated nails, $2.85 per keg.

Finished Materials.—Bookings of bars, shapes and plates continued in fair volume during the past week, and while it was reported that for attractive tonnages for early shipment it was possible to secure a price of 2c. on bars and shapes, most of the business going on books is at 2.10c., Pittsburgh basis. Plates for all deliveries are quoted at 1.90c., Pittsburgh, though one or two mills not now particularly anxious for business are quoting 2c. There has been a heavy movement in wire products, jobbers and dealers coming into the market to get the benefit of the old prices. From Dec. 1 most of the mills will be quoting the advanced schedule of $2.60 for plain wire and $2.85 for common wire nails. December specifications in wire products are heavy. There is little demand for light rails or track accessories, but prices are firmer. Only fill-in requirements of bolts and nuts are being booked, as jobbers and manufacturers are fairly well stocked, and have not paid any attention to first quarter contracts. Prices are steady, and it is expected that a slight advance will be made for first quarter contracts. Demand is fairly active for cold-finished materials and the same applies to hoops and bands with prices showing more strength, though unchanged from last week.

Coke.—Coke contracts through the first quarter are being made for foundry fuels at prices unchanged from those now pravailing. Demand for prompt shipment is only fair.

Fluorspar.—More activity is noted in the demand for fluorspar, but sales are not running into heavy tonnages. A reduction of 50c. per ton has been made in prices of 85 per cent and over calcium fluoride and not over 5 per cent silica, by Kentucky and Illinois producers. Prices are given on page 1507.

Old Material.—Demand for old materials in this district is light, but there has been some selling in the Valleys and Birmingham districts. Dealers are making the market, and with the exception of machinery cast, railroad cast, and busheling, for which there is no demand at present, prices are up 50c. per ton over last week.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$15.50 to	$16.00
Scrap rails for melting	14.50 to	15.00
Short rails	18.00 to	18.50
Relaying rails	30.00 to	30.50
Rails for rolling	16.00 to	16.50
Old car wheels	14.50 to	15.00
No. 1 locomotive tires	17.00 to	17.50
Railroad malleable	16.50 to	17.00
Agricultural malleable	15.00 to	15.50
Loose sheet clippings	12.00 to	12.50
Champion bundled sheets	13.00 to	13.50
Per Net Ton		
Cast iron borings	11.00 to	12.00
Machine shop turnings	10.50 to	11.00
No. 1 machinery cast	18.50 to	19.00
No. 1 railroad cast	16.00 to	16.50
Iron axles	22.00 to	22.50
No. 1 railroad wrought	13.50 to	13.00
Pipes and flues	9.00 to	9.50
No. 1 busheling	11.00 to	11.50
Mixed busheling	9.00 to	9.50
Burnt cast	11.50 to	12.00
Stove plate	11.50 to	12.00
Brake shoes	13.00 to	13.50

Birmingham

A Few Sales of Pig Iron for First Half of Next Year at the Higher Quotations

BIRMINGHAM, ALA., Dec. 2.—Southern furnace interests have inquiries for iron for first half of 1925, and a few sales have been made for that period, the higher quotations obtaining. Sales were made during the past week at $19.50 per ton, No. 2 foundry, with the market usually quoted at $19. A small tonnage was sold here today at $20. Sales have been made into the St. Louis, Chicago, Cincinnati and other territories, considerable tonnage to be shipped into the first two districts in particular. The sales recently have not been as voluminous as they have been, but there is no doubt that the buying movement is still under way and that there is need yet for a large tonnage of iron. Local consumers have been buying in good quantity, and even

smaller industries have been in the market. The Sloss-Sheffield Steel & Iron Co. has taken possession of the Alabama Co.

We quote per gross ton, f.o.b. Birmingham district furnace as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$18.50 to $19.00
No. 2 foundry, 2.25 to 2.75 sil.	19.00 to 19.50
Basic	19.00 to 19.50
Charcoal, warm blast	30.00 to 31.00

Steel.—While steel orders are reported more frequent and fabricating plants are preparing to produce on a larger scale, the increased business is not in line with the activity of the pig iron market. The Nashville Bridge Co., at Bessemer, 12 miles from Birmingham, has completed an addition to its plant. It has the contract for the structural steel for the office building in Birmingham for the Alabama Power Co., 700 tons. The Bessemer Galvanizing Co., subsidiary to the Nashville Bridge Co., has also taken on some business recently. Steel production has been increased by the starting up of another open-hearth furnace by the Gulf States Steel Co. Steel bars in this district quoted 2.25c. to 2.35c., Birmingham.

Cast Iron Pipe.—Trade is considered good, but quotations show no improvement this week, $39 for 6-in. and over with $43 for 4-in. and over being shaded slightly. In sanitary pipe there has been decided increase in production.

Coke.—Independent producers of coke announce further improvement in the Southern market. Quotations remain unchanged, ranging from $4.50 to $5.25 for foundry coke, both by-product and bee-hive oven.

Old Material.—Better prices are noted in the old material market, heavy melting steel being up 50c. Demand is a little better with melting steel, No. 1 cast and stove plate. Stocks are in good shape.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	12.50 to 13.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	19.00 to 19.50
Steel rails	12.50 to 13.00
No. 1 cast	14.50 to 15.00
Tramcar wheels	15.00 to 16.00
Car wheels	14.00 to 15.00
Stove plate	14.00 to 15.00
Machine shop turnings	6.00 to 7.00
Cast iron borings	7.00 to 8.00
Rails for rolling	15.00 to 16.00

San Francisco

Pig Iron Prices Advanced—Market Firmer—Buying Interest Slackens

SAN FRANCISCO, Nov. 28 (*By Air Mail*).—Although business was somewhat slower in the Pacific Coast iron and steel market during the past week, primarily because of the Thanksgiving holiday, price advances of $1 to $2 a ton on both foreign and domestic pig iron, and also firmer prices quoted by some of the local mills on plates, shapes, bars and sheets were noteworthy developments. Contracts awarded for structural steel were comparatively small, although jobs involving several thousand tons are pending.

Warehouse business was, for the most part, light. Buyers seem inclined to order only for current requirements, and it is not generally expected that any large business of this character will develop until after inventories have been taken. The somewhat stronger buying of iron and steel of all kinds that developed immediately after election, seems to have become more conservative. The undertone of the market, however, reflects confidence in the future.

Pig Iron.—Both importers and sellers of domestic pig iron advanced prices from $1 to $2 a ton. The market is quiet and no large buying is being done. There is, at present, a surplus of foreign iron in San Francisco. Mills and foundries are fairly well supplied. The Southern Pacific Railroad placed an order for 500 tons of local domestic iron recently, which was probably one of the largest orders placed during the past two weeks. A shipment of about 5000 tons of Scotch and English iron is reported en route. Current quotations are as follows:

	Per Ton
Utah basic	$29.00 to $30.50
Utah foundry	29.50 to 31.00
Scotch foundry, duty paid, ship side, San Francisco	27.50 to 30.00
English foundry	28.50 to 30.00
Belgium foundry	26.00 to 28.00

Birmingham, Ala., foundry iron, sil. 2.75 to 3.25, is $29.75 delivered in San Francisco.

Coke.—Current business is small. No large orders were reported during the past week. A shipment of about 11,000 tons of English coke is en route. Prices are unchanged, imported coke ranging from $16.50 to $18, ship side, San Francisco. Birmingham by-product coke is $18 to $20 delivered.

Plates.—Quotations are firmer, ranging from 2.40c. to 2.45c. base c.i.f., although some business was still reported during the week at 2.35c. base. No large contracts were placed, but orders for several thousand tons are pending.

Structural Material.—Stronger prices are being quoted by some of the local mills. Quotations are 2.50c. to 2.55c. base, c.i.f., although 2.45c. is still obtainable in some places. Awards made during the week were small.

Bars.—Reinforcing bars are holding firm at 3.35c. carload, but merchant bars are higher and are now being quoted 2.50c. to 2.55c. Business is small but fairly active. Soft steel bars from warehouse are $3 base.

Old Material.—The market for scrap is quiet. The demand is small but consistent and no price changes have been made, heavy melting steel holding firm at $11 per gross ton. Prices for scrap delivered to consumer's mill are as follows:

	Per Gross Ton
No. 1 heavy melting steel	$11.00 to $12.00
Scrap rails, miscellaneous	11.00 to 12.00
Rolled steel wheels	11.00 to 12.00
Couplers and knuckles	11.00 to 12.00
Mixed borings and turnings	6.00 to 6.50
Country mixed cast scrap	8.50 to 9.00

Detroit Scrap Advancing—Still Buying Pig Iron

DETROIT, Dec. 2.—Several further advances have been registered during the past week on old material, notably, a sale of short turnings and borings at $14 and heavy melting and shoveling steel at $16.75. The looked-for weakness in the market, prior to inventory, has not developed and prices may carry through this low shipment period. There is still some pig iron being bought in the district despite the large tonnage placed immediately after election. Manufacturers of automotive castings are covered by orders on their books only for first quarter and any upward trend of automobile production schedules will necessarily be reflected in further pig iron purchases.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting steel	$16.50 to $17.00
Shoveling steel	16.50 to 17.00
Borings	13.50 to 14.00
Short turnings	13.50 to 14.00
Long turnings	13.00 to 13.50
No. 1 machinery cast	17.00 to 18.00
Automobile cast	18.00 to 19.00
Hydraulic compressed	14.00 to 15.00
Stove plate	14.50 to 15.50
No. 1 busheling	14.50 to 15.00
Sheet clippings	10.00 to 11.00
Flashings	12.50 to 13.50

Youngstown Scrap Market

YOUNGSTOWN, Dec. 2.—The leading middle interest handling scrap is quoting $19.50 for heavy melting and $17.50 for hydraulically compressed sheets, and advises that prices on heavy tonnages are, of course, subject to negotiation. It appears that dealers bought substantially at prices out of line with the ideas of district melters, who are withholding purchases for the present, at least, except in a moderate way.

Cleveland

Large Tonnages of Steel for Buildings and Ships—Pig Iron Still Active

CLEVELAND, Dec. 2.—The placing of several large lots of steel in the building and shipbuilding field aggregating about 20,000 tons was the outstanding feature of the local steel market during the past week. The Ohio Bell Telephone Co. placed 8000 to 9000 tons of structural material for its new Cleveland exchange and the Cleveland Electric Illuminating Co. placed 5000 tons for a new power house. The American Shipbuilding Co. took a large freight boat for the Bradley Transportation Co. that will require 5000 tons of steel which has been placed with the Carnegie Steel Co. New buying of finished steel declined sharply during the week, but this was to be expected, as most consumers of steel bars are under contract for their early requirements for the first quarter. Some consumers who failed to buy before the price advance are now holding off. While buying has subsided, mills are getting a heavy volume of specifications on recent orders and much of this tonnage is for January shipment. Orders are well distributed, but the bolt and nut makers, manufacturers of cold-drawn steel and implement manufacturers are ordering freely. Automobile plants are on light production schedule this month, but are expected to increase their output in January. In the meantime, most of them are ordering steel rather sparingly, although one large car builder issued specifications during the week for 7000 tons of steel bars and miscellaneous steel products. Most of the business now on the mill books was entered before the recent price advance and as yet the high prices have not been well tested. The only price change during the week was a $2 a ton advance to 2.85c., Cleveland, on screw stock by the American Steel & Wire Co.

More activity is developing in the Lake shipbuilding industry. In addition to the placing of one large boat, a new inquiry has come out for a boat for the ore carrying trade, this coming from the Oglebay-Norton Co., Cleveland, calling for 5000 tons of steel. Some new good sized inquiries have developed in the structural field. The blast furnace project of the Central Steel Co., Massillon, Ohio, under consideration for about a year, has evidently about come to a head, as this company is now negotiating for contracts for building the furnace. This will require 1000 tons of steel.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage and heavier, 3.85c.; narrower than 1 in., all gages, 4.35c.; No. 9 annealed wire, $3.15 per 100 lb.; No. 9 galvanized wire, $3.60 per 100 lb.; common wire nails, $3.25 base per 100 lb.

Pig Iron.—Pig iron sales have further declined in most sections, although Cleveland producers booked 80,000 tons during the week, or considerably more than during the preceding week. The increase in the total sales was due to several large lot sales by one producer in the Pittsburgh district. This interest sold 60,000 tons, most of it going into Pittsburgh territory and including one 9000-ton lot. The buying movement for the first quarter is about over, although a few of the smaller foundries have not yet purchased iron and some consumers have not covered for all of their expected requirements for that delivery. Some new inquiries have come out for the second quarter, but most furnaces are refusing to quote for that delivery. The Westinghouse Electric & Mfg. Co. has purchased from 3000 to 4000 tons of foundry iron for its Cleveland plant for the first quarter and first half, this being divided between Cleveland furnaces and outside furnaces having the Valley freight rate. Prices show a firm tendency. One Lake furnace has advanced foundry iron from $20.50 to $21. Valley district foundry iron is still to be had at $20.50, but a large share of the business booked during the week was on a $21 Valley basis and one producer is holding to $22. In Cleveland the price is unchanged at $21 at furnace for local delivery. Basic iron is inactive, following a recent sale at slightly under $20.50 Valley furnace. The basic market is now regarded at from $20.50 to $21. Several makers of Southern foundry iron have advanced prices 50c. a ton and the range now is from $19 to $19.50 for the first quarter. Ohio silvery iron can be had at $28.50 for 8 per cent for December shipment but for the first quarter it is being held at $29.50.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$20.50 to $21.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	21.50
Southern fdry., sil. 1.75 to 2.25	25.01 to 25.51
Malleable	21.50
Ohio silvery, 8 per cent	31.52 to 32.52
Stand. low phos., Valley furnace	28.00 to 29.50

Semi-Finished Steel.—A large tonnage in semi-finished steel, mostly in sheet bars, was booked during the week, sold by a Cleveland plant. In the two weeks since it opened its books it has sold 150,000 tons, mostly in sheet bars, or virtually its entire output for the first quarter. Most of this business has been taken subject to trade paper quotations, slabs to command the sheet bar price. An Ohio mill purchased 1000 tons of sheet bars from a Youngstown mill at $37 for December and January shipment. The expected advance of $2 a ton on wire rods to $48, Cleveland, has been announced by the American Steel & Wire Co.

Sheets.—While sales for the first quarter have been fair, many consumers are deferring purchases, this being true of automobile manufacturers as well as other buyers. Consequently, little business has been placed at the price advance. Some mills are still eager for tonnage for early rolling and are making price concessions for December shipment. For early delivery black sheets range from 3.40c. to 3.50c. and galvanized from 4.50c. to 4.60c., and blue annealed are quoted at 2.60c. and automobile body sheets at 4.60c.

Reinforcing Bars.—Rail steel bars are still somewhat irregular with quotations ranging from 1.80c. to 1.90c. New billet steel reinforcing bars are quoted at from 2c. to 2.10c., Pittsburgh. New demand is light.

Steel Bars, Plates and Structural Material.—Steel bars are firm in this market at 2.10c., Pittsburgh, or 2.29c., Cleveland. However, efforts to put structural material on the same basis have not yet proved successful and while some mills are holding to 2.10c., desirable lots can still be purchased at 2c. Although the plate market is firmer and the 1.90c. price is commonly quoted, some buyers are still able to place orders at 1.80c.

Hot-Rolled Strip Steel.—Hot-rolled strip steel, in 10-in. and wider material is generally quoted at 2.25c., although the market is not well established on this basis, and net prices are still being named. Hoops are firm at 2.50c., and bands at 2.40c.

Cast Iron and Steel Pipe.—The City of Cleveland will take bids Dec. 3 for 2685 tons of 36-in. cast iron pipe and alternative bids for 822 tons of 5/16 in. lock bar steel pipe for two extensions of water lines. At the same time, bids will be taken for 788 tons of 20-in. cast iron pipe for a third extension.

Bolts, Nuts and Rivets.—Cleveland bolt and nut manufacturers are considering the adoption of a Cleveland basing point for outside shipments with an advance in discounts above the Pittsburgh base and a freight allowance. Buyers of small bolts, particularly in Detroit, where there is a large consumption in the automotive industry, contend that they should be given the advantage of the Cleveland basing point because small bolts are made from wire that is now sold on a Cleveland base. However, bolt and nut makers believe that the adoption of a Cleveland base without some modification would tend to localize business too much. The volume of orders continues good. Rivet makers are now getting a good volume of specifications as well as inquiries for first quarter contracts. A price advance of $2 a ton for the first quarter is being considered.

Iron Ore.—The ore shipping season closed with a total movement by water of 42,623,572 tons, this including one cargo shipped this month from Escanaba, which is 8906 tons. Shipments for the season by ports are tabulated in another column.

Coke.—Prices are firmer. Round lot sales of furnace coke were made during the week at $3.50 at ovens for the first quarter and some producers are asking $3.75. While foundry coke is stiffer, prices are unchanged at a range of $4.25 to $5.50 per net ton at ovens for standard Connellsville makes. A majority of foundries are probably now under first quarter contracts.

Old Material.—The market is firm without any further price advances and less active than it has been recently. Most mills appear to have purchased enough scrap to carry them over into January and dealers are not pressing sales. Some producers are holding most of their scrap and dealers are not offering yard stocks because of the expectation of higher prices. Consequently the amount of scrap that is coming out on the market is very limited. There is a demand by dealers for heavy melted steel at $20.25 to $20.50 for Canton delivery and $25 to $25.50 for Warren delivery.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$18.25 to $18.75
Rails for rolling	18.25 to 18.50
Rails under 3 ft.	20.00 to 20.50
Low phosphorus melting	20.50 to 21.00
Cast iron borings	16.00 to 16.25
Machine shop turnings	15.50 to 15.75
Mixed borings and short turnings	16.00 to 16.50
Compressed sheet steel	15.50 to 16.00
Railroad wrought	16.00 to 16.50
Railroad malleable	19.25 to 19.50
Light bundled sheet stampings	13.75 to 14.00
Steel axle turnings	16.25 to 16.50
No. 1 cast	19.50 to 20.00
No. 1 busheling	15.25 to 16.00
Drop forge flashings	13.75 to 14.00
Railroad grate bars	15.50 to 16.00
Stove plate	15.50 to 16.00
Pipes and flues	14.00 to 14.25

Philadelphia

Activity Decreases as End of Year Approaches —Pig Iron Firm, with Inquiries Current for Second Quarter

PHILADELPHIA, Dec. 2.—Post-election activity is diminishing as the holiday season and inventory period approach, but the decline in volume of business is viewed as in the normal course of events and sellers are looking forward to the new year for a continuation of the recent demand. Prices in the meantime are holding firm and mills, as a rule, show no inclination to seek commitments extending very far into the first quarter. Buyers, however, are evidently interested in covering their requirements for the immediate future at the prices prevailing for this year's delivery and are in some cases accepting prompt shipment rather than contract at the quotations made for January tonnages. With the possible exception of plates, finished steel products are evidently firm at the 2c. base, Pittsburgh, for first quarter. Quotations of 2c. base and 2.05c. per lb. have been made on first quarter plate business, but current shipment orders still obtain as low as 1.80c. per lb., Pittsburgh.

Sheets are stronger and quotations for first quarter on black and galvanized show an advance of 10c. per 100 lb. Tin plate transactions have been light, but the $5.50 per base box established for first half business is reported being adhered to strictly. Cold-rolled strip steel is evidently fairly firm at 4.15c. per lb., base, for first quarter, but for shipment during the rest of this year considerably lower prices are occasionally made.

It is believed now that the Pennsylvania Railroad will come into the market for its rail requirements during the present month, and the tonnage, it is estimated, will exceed 100,000.

Pig iron continues strong in the face of a considerably lighter demand in the past week. The majority of eastern Pennsylvania furnaces are apparently well booked with first quarter tonnage and are beginning to be called upon to consider business for second quarter or first half.

Pig Iron.—With furnaces booked satisfactorily for first quarter and prices firm, occasional inquiries for second quarter or first half are appearing. Furnaces are but little interested in second quarter business at this time, but where it is evident that a contract for first half would not extend too far into the second quarter, quotations are reported to have been made. On first quarter business the $23 base for foundry iron is firm and $22.50 is still being quoted for prompt shipment. Inquiries now in the market are generally for small lots of foundry. The basic market is stronger and the tendency of quotations upward. One furnace interest, after booking several thousand tons at a price understood to have been $22.50 delivered, went to a $23 basis. Reports continue of additional furnaces being blown in. The Alan Wood Iron & Steel Co. is preparing to blow in another furnace at Swedeland within the next 10 days to two weeks, bringing the total in blast to three.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$23.26 to $24.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.76 to 24.63
East. Pa. No. 1X	24.26 to 25.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.17 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.67 to 29.17
Basic delivered eastern Pa.	22.50 to 23.00
Gray forge	22.50 to 23.00
Malleable	23.00 to 23.50
Standard low phos. (f.o.b. furnace)	24.50 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.50 to 25.00

Billets.—Demand continues light, but $37 is fairly firm on rerolling billets for first quarter delivery. Inquiries for prompt shipment, however, will bring out quotations of $1 to $1.50 per ton less. Forging billets are quotable at $42 for first quarter with $41 obtainable from some mills.

Bars.—Prices seem to be stable at 2c. to 2.10c. per lb., Pittsburgh, with the latter price the prevailing quotation for first quarter. Mills report better tonnages of bars on their books than other products. One large independent mill in the Pittsburgh district reports operation at close to capacity on bars, while general mill operation is between 75 and 80 per cent.

Shapes.—Quotations for first quarter range from 2c. to 2.10c., Pittsburgh, but the strength of the bar market is not so evident in shapes. Inquiry is in fair volume, but fabricators are not working on the large projects that have recently been in the market.

Plates.—While 1.80c. is still the minimum for prompt shipment, mills quoting on this basis are looking forward to a 2c. market in the first quarter. The maximum for current shipment is 1.90c. per lb., Pittsburgh, with 2c. quoted for first quarter. Demand from railroads, car builders and shipyards continues in fair volume.

Cold-Rolled Strip.—On first quarter business 4.15c. per lb. base is being quoted by some sellers, but this is not yet the minimum. Orders for prompt shipment have brought out quotations of 4c. per lb. base and less. Hot-rolled strip is quoted at 2.40c. per lb. base for first quarter, with concessions for current delivery.

Sheets.—Both black and galvanized have advanced for first quarter; black to a base of 3.60c. per lb., Pittsburgh, and galvanized to 4.70c. per lb., Pittsburgh. On lots for prompt shipment the former prices are still obtainable. Blue annealed sheets are firm at 2.60c. per lb., Pittsburgh, for prompt shipment and 2.70c. for first quarter.

Warehouse Business.—Dullness continues, as the mills are still able to give sufficiently early deliveries to take many of the larger lots that would normally be placed with the jobber. Black and galvanized sheets

have been advanced to 4.85c. per lb. base for black and 6c. per lb. for galvanized.

Soft steel bars and small shapes, 3.10c.; iron bars (except bands), 3.10c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.10c.; tank steel plates, 5/16 in., 3.25c.; blue annealed steel sheets, No. 10 gage, 3.75c.; black sheets, No. 28 gage, 4.85c.; galvanized sheets, No. 28 gage, 6c.; square twisted and deformed steel bars, 2.85c.; structural shapes, 3.10c.; diamond pattern plates, ¼-in., 5.30c.; 5/16-in., 5.50c.; spring steel, 5c.; round cold-rolled steel, 4.05c.; squares and hexagons, cold-rolled steel, 4.55c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 3.85c.; narrower than 1 in., all gages, 4.35c.; steel bands, No. 12 gage to 5/16 in., inclusive, 3.85c.; rails, 3.10c.; tool steel, 8.50c.; Norway iron, 6.75c.

Old Material.—The momentum of the market, developed under stress of brokers' efforts to cover on old orders, is rapidly diminishing and transactions are proceeding at a more nearly normal pace. In view of the approach of the holidays and inventory period, but little is expected until the new year. Heavy melting steel is quotable at $19 to $20 per ton, delivered eastern Pennsylvania, with a number of purchases reported at $19.50 per ton, delivered. Stove plate is strong and $16.50 per ton, delivered, has been offered by one eastern Pennsylvania consumer. Machine shop turnings are quotable at $16 to $17 per ton, delivered, but borings and turnings are still the quiet spot of the market.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$19.00 to $20.00
Scrap rails	19.00 to 19.50
Steel rails for rolling	20.00
No. 1 low phos., heavy 0.04 and under	22.50 to 23.50
Couplers and knuckles	21.50 to 22.50
Rolled steel wheels	21.50 to 22.50
Cast-iron car wheels	19.00 to 19.50
No. 1 railroad wrought	19.00 to 20.00
No. 1 yard wrought	18.00 to 19.00
No. 1 forge fire	15.50 to 16.00
Bundled sheets (for steel works)	15.50 to 16.50
Mixed borings and turnings (for blast furnace use)	13.00 to 13.50
Machine shop turnings (for steel works use)	16.00 to 17.00
Machine shop turnings (for rolling mill use)	16.00 to 16.50
Heavy axle turnings (or equivalent)	16.00 to 16.50
Cast borings (for steel works and rolling mills)	15.50 to 16.00
Cast borings (for chemical plants)	18.50 to 19.50
No. 1 cast	18.50 to 19.50
Heavy breakable cast (for steel plants)	17.00 to 17.50
Railroad grate bars	16.00 to 16.50
Stove plate (for steel plant use)	16.00 to 16.50
Wrought iron and soft steel pipes and tubes (new specifications)	17.50 to 18.00
Shafting	25.00 to 25.50
Steel axles	25.00 to 25.50

Imports.—In the week ended Nov. 29, imports through the port of Philadelphia included 500 tons of pig iron from the United Kingdom and a total of 6562 tons of iron ore; 6307 tons from Sweden and 255 tons from Germany.

To Investigate Distribution Costs

WASHINGTON, Nov. 28.—A conference of representatives of the retail, wholesale and manufacturing interests of the United States will be held in Washington early in January under the auspices of the department of domestic distribution of the Chamber of Commerce of the United States. It will consider the problem of distribution, compounded of all the factors that enter into the spread of the price of an article on its way from producer to consumer, and will formulate a program of investigation to be carried on by representative committees of business men and economists.

The recommendations of these committees, each dealing with a different phase of the inquiry, will form the basis of discussion at a final conference representing all branches of commercial activity involved in distribution, and a definite course of action to reduce the costs, which necessarily enter into prices, will, it is hoped, be evolved.

One furnace at the Coatesville plant of the Bethlehem Steel Corporation, at Coatesville, Pa., is expected to blow in this week.

RAILROAD EQUIPMENT BUYING

Car Inquiries Call for More Than 6000—535 Cars Booked

Inquiries of the week for cars considerably outdistanced orders. Only 535 cars are reported purchased, against inquiries totaling more than 6000, the largest total of inquiries for many weeks. Included among the railroads contributing substantially to this inquiry are the Missouri Pacific, the Burlington, the Northern Pacific and the St. Louis Southwestern. Locomotive purchases reported total 15, bought by the Terminal Railroad Association of St. Louis.

On Nov. 15 there were 11,637 locomotives in need of repair, according to the car service division of the American Railway Association. This was an increase of 542 locomotives over the number in need of repair Nov. 1. During the first half of November the railroads repaired in their own shops 35,420 locomotives, a decrease of 813 compared with the number repaired in the last half of October.

There was a decrease of 5236 in the number of freight cars in need of repair on Nov. 15, compared with Nov. 1. The total Nov. 15 was 185,307, or 8 per cent, compared with 190,543, or 8.2 per cent, Nov. 1.

The Delaware, Lackawanna & Western has closed on 30 express cars with the Pressed Steel Car Co.

The Central of Georgia has purchased 500 steel box cars from the Tennessee Coal, Iron & Railroad Co.

The Brooklyn City Railroad has closed on 335 electric street cars, 150 with the J. G. Brill Co., 100 with the St. Louis Car Co. and 85 with the Osgood-Bradley Co.

The Western Fruit Express has closed on 1200 steel underframes with an unnamed maker.

The Buffalo & Susquehanna Railroad, recently in the market for 200 to 400 55-ton coal cars, is understood to have postponed purchase indefinitely.

The Great Northern Railway is in the market for 2 flat cars.

Swift & Co., Chicago, are inquiring for 100 steel underframes.

The Allis-Chalmers Mfg. Co. is in the market for 6 hopper bottom gondola cars.

The United States Rubber Co. has closed on 3 10,000-gal. tank cars with the General American Tank Car Corporation.

The Virginia Smelting Co., Boston, has purchased 2 tank cars from the General American Tank Car Corporation.

The New York, Chicago & St. Louis has closed on 200 steel underframes with the Pennsylvania Car Co.

The Pennsylvania Railroad has ordered 2 combination passenger and baggage cars, gasoline motor-driven, and 1 trailer from the J. G. Brill Co.

The Missouri Pacific is inquiring for 2000 40-ton box cars, 800 40-ton automobile cars and 200 50-ton automobile cars.

The Burlington is in the market for 500 to 1000 automobile cars and before the end of the month will issue further inquiries for 2000 to 3000 additional cars, including stock and gondola cars.

The Northern Pacific is inquiring for 1000 box cars in addition to the 800 gondola cars now pending.

The St. Louis Southwestern has revived an inquiry for 1000 box cars.

The Wabash is inquiring for 400 gondola car bodies and repairs to trucks.

The Terminal Railroad Association of St. Louis has ordered 15 8-wheel switching locomotives from the Baldwin Locomotive Works.

The Nickel Plate has placed 200 underframes with the Pennsylvania Car Co.

The Central Railroad of New Jersey is inquiring for 23 coaches, 5 combination coach and baggage cars and 2 club cars.

The Chicago Rapid Transit has ordered 100 elevated railroad cars from the Cincinnati Car Co.

Foreign Trade Convention of 1925 at Seattle

The National Foreign Trade Council announces through its secretary, O. K. Davis, India House, New York, that the twelfth national foreign trade convention will be held at Seattle on June 24, 25 and 26, 1925. Eastern delegates are expected to go from New York by special train. The last Pacific Coast convention of the foreign trade organization was held at San Francisco in 1920.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mills, base, per lb.....1.90c. to 2.00c.
F.o.b. Chicago, base, per lb.....2.20c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2.10c.
F.o.b. Chicago, base, per lb.....2.20c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb.....2.10c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.10c.
Reinforcing steel bars f.o.b. P'gh mills, base, per lb....2.10c.
Rails steel bars f.o.b. Chicago district mills, base, per lb..2c.
Common iron bars delivered New York, base, per lb....2.34c.
Common iron bars f.o.b. Chicago, base, per lb.....2.05c.
Refined iron bars f.o.b. P'gh mills, base, per lb..2.90c. to 3.00c.
Common iron bars delivered Philadelphia, base, per lb..2.32c.

Hot-Rolled Flats

(Pittsburgh)

Hoops, base, per lb.....2.50c.
Bands, base, per lb.....2.40c. to 2.50c.
Strips, 10 in. and wider, base, per lb.....2.25c.
Strips, less than 10 in. wide to 3 in.....2.40c.
Strips, 3 in. wide and less, base, per lb.....2.50c.

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb..2.70c.
Screw stock and shafting f.o.b. Chicago mills, base, per lb.2.70c.
Screw stock, Worcester mills, base, per lb.....2.90c.
Screw stock, base, per lb., Cleveland.....2.85c.
Shafting, ground, f.o.b. mill, base, per lb.....3.10c.
Strips, f.o.b. P'gh mills, base, per lb.....4.00c. to 4.15c.
Strips, f.o.b. Cleveland mills, base, per lb.....4.15c.
Strips, f.o.b. Chicago mills, base, per lb.....4.45c.
Strips, f.o.b. Worcester mills, base, per lb.....4.30c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....$2.85
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.60
Annealed fence wire, base, per 100 lb..... 2.75
Galvanized wire No. 9, base, per 100 lb..... 3.20
Galvanized barbed, base, per 100 lb..... 3.55
Galvanized staples, base, per keg..... 3.55
Painted barbed wire, base, per 100 lb..... 3.30
Polished staples, base, per keg..... 3.30
Cement coated nails, base, per count keg..... 2.25
Woven wire fence, base, per net ton to retailers.....67.00

Chicago district mill prices are $2 per ton above the foregoing and Chicago delivered prices are $3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices $3 a ton higher; Worcester, Mass., mills $3 a ton higher on products of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

Sheets

Blue Annealed

(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh dist. mills.....2.60c. to 2.70c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills..2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mills.3.40c. to 3.60c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....3.70c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.4.60c. to 4.70c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....4.85c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mills.3.40c. to 3.60c.
No. 28 (base) per lb., f.o.b. Chicago dist. mills.....3.70c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. mill.....4.75c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill.....4.90c.

Tin Plate

Standard cokes, per base box f.o.b. Pittsburgh district Mills $5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind..... 5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb coating, 100 lb. base $11.20	20-lb. coating I. C....$15.50
8-lb. coating I. C.... 11.50	25-lb. coating I. C.... 17.00
15-lb. coating I. C.... 14.35	30-lb. coating I. C.... 18.35
	40-lb. coating I. C.... 20.35

Rivets

Large, f.o.b. P'gh and Cleveland mill, base, per 100 lb..$2.60
Large, f.o.b. Chicago mills, base, per 100 lb..... 2.75
Small, f.o.b. P'gh and Cleveland mills 70, 10 and 5 per cent off list
Small, f.o.b. Chicago mills.....70, 10 and 5 to 70 and 10 off list

Rails and Track Equipment

(F.o.b. mill)

Rails, standard, per gross ton.....$43.00
Rails, light, billet, base, per lb.....1.80c. to 1.90c.
Rails, light rail steel, base, per lb.....1.65c. to 1.75c.
Spikes, ¼ in. and larger, base, per 100 lb.....$2.80 to $2.95
Spikes, ⅜ in. and smaller, base, per 100 lb.... 3.10 to 3.20
Spikes, boat and barge, base, per 100 lb..... 3.25
Track bolts, all sizes, base, per 100 lb..... 3.75 to 4.00
Track bolts, heat treated, base, per 100 lb..... 4.25 to 4.50
Tie plates, per 100 lb..... 2.35 to 2.50
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+11	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1½ points, with supplementary discount of 5 per cent.

NOTE—The above discounts on steel pipe also apply at Lorain and Youngstown, Ohio, and Wheeling, W. Va. Chicago district mills have a base 2 points less. Chicago delivered base 2½ points less.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes
Cold Drawn

1 in.	55-58	3 and 3¼ in.	36-39
1¼ and 1½ in.	47-50	3½ and 3¾ in.	37-40
1¾ in.	31-34	4 in.	41-44
2 and 2¼ in.	22-25	4½ in. and 5 in.	33-37
2 and 2¾ in.	32-35		

Hot Rolled

3 and 3¼ in.	38-41	4-in.	43-46
3½ in. and 3¾ in.	39-42		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....85 to 87 per cent off list
Carbon 0.30 to 0.40, base.....83 to 85 per cent off list

Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

Cents per Ft.		Cents per Ft.	
2-in. O.D. 12 gage....	15	2¼-in. O.D. 10 gage..	20
2-in. O.D. 11 gage....	16	3-in. O.D. 7 gage.....	35
2-in. O.D. 10 gage....	17	1½-in. O.D. 9 gage...	15
2¼-in. O.D. 12 gage..	17	5½-in. O.D. 9 gage...	55
2¼-in. O.D. 11 gage..	18	5½-in. O.D. 9 gage...	57

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.65
Old range non-Bessemer, 51½ per cent iron	4.90
Mesabi Bessemer, 55 per cent iron	5.40
Mesabi non-Bessemer, 51½ per cent iron	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.00c. to 9.50c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	42c.
Manganese ore, ordinary, 48 per cent manganese from the Caucasus	40c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$8.50
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f., Atlantic seaboard	18.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	80c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt	$3.25
Foundry coke, f.o.b. Connellsville prompt	$4.50 to 4.75
Mine run steam coal, f.o.b. W. Pa. mines	1.50 to 2.10
Mine run coking coal, f.o.b. W. Pa. mines	1.75 to 1.90
Mine run gas coal, f.o.b. W. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.15 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.25 to 1.35

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$105.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	105.00
Ferrosilicon, 50 per cent, delivered	75.00 to 82.50
Ferrosilicon, 75 per cent	140.00
Ferrotungsten, per lb. contained metal	87c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	10.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated.)

Spiegeleisen, domestic, 19 to 21 per cent.....$31.00 to $33.00
Spiegeleisen, domestic, 16 to 19 per cent..... 30.00 to 32.00
Ferrosilicon, Bessemer, 10 per cent, $39.50; 11 per cent, $42; 12 per cent, $44.50; 14 to 16 per cent (electric furnace), $36.00.

Silvery iron, 5 per cent, $27.00; 6 per cent, $28.00; 7 per cent, $29.00; 8 per cent, $29.00 to $30.00; 9 per cent, $32.50; 10 per cent, $34.50; 11 per cent, $37.00; 12 per cent, $39.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	$17.50
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	18.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per gross ton	19.75

Per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$40.00 to $43.00	$36.00 to $40.00
Maryland	45.00 to 47.00	40.00 to 42.00
Ohio	40.00 to 42.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois	——	37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Illinois	42.00 to 45.00	——
Ground fire clay, per net ton	6.00 to 7.00	
Silica Brick:		
Pennsylvania		33.00
Chicago	43.00 to 44.00	
Birmingham		50.00
Ground silica clay, per net ton	7.50 to 8.00	
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		45.00

Bolts and Nuts

(F.o.b. Chicago and Pittsburgh)

Machine bolts, small rolled threads..60 and 20 per cent off list
Machine bolts, all sizes, cut threads..60 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads, 60 and 10 per cent off list
Carriage bolts, cut threads, all sizes.....60 per cent off list
Eagle carriage bolts.....65, 10 and 10 per cent off list
Lag bolts .....70 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads..50, 10 and 5 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in. 50, 10 and 5 per cent off list
Larger and longer sizes.....50, 10 and 5 per cent off list
Hot-pressed nuts, blank or tapped, square.....4.50c. off list
Hot-pressed nuts, blank or tapped, hexagons..5 per cent off list
C.p.c. and t. square or hex. nuts, blank or tapped..4.50c. off list
Eagle carriage bolts.....65, 10 and 10 per cent off list
Plow bolts .....50, 10 and 5 per cent off list
Semi-finished hex. nuts:
½ in. and smaller, U. S. S....80, 10, 10 and 5 per cent off list
⅝ in. and larger, U. S. S....75, 10, 10 and 5 per cent off list
Small sizes, S. A. E.....80, 10, 10, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger.....80, 10 and 5 per cent off list
Stove bolts in packages.....80, 10 and 5 per cent off list
Stove bolts in bulk.....80, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 10 per cent off list
Bolt ends with cold pressed nuts....50 and 10 per cent off list
Washers .....6.00c. to 6.25c. off list
Lock washers .....80 per cent off list

Foregoing prices are quoted f.o.b. Cleveland by Cleveland manufacturers for Cleveland delivery.

Semi-Finished Castellated and Slotted Nuts

(F.o.b. Chicago and Pittsburgh)

(To jobbers and consumers in large quantities)

	Per 1000 S. A. E.	Per 1000 U. S. S.		Per 1000 S. A. E.	Per 1000 U. S. S.
¼-in.	$4.25	$4.25	⅞-in.	$13.25	$13.50
⅜-in.	4.90	4.90	1-in.	16.25	16.50
7/16-in.	5.90	6.25	1⅛-in.	22.50	23.00
½-in.	7.50	8.50	1¼-in.	34.00	34.00
9/16-in.	9.75	10.00	1⅜-in.	53.00	55.00

Larger sizes—Prices on application.

Cap and Set Screws

(F.o.b. shipping point.)

Milled hex. cap screws.....80 and 10 per cent off list
Milled standard set screws, case hardened 80 and 10 per cent off list
Milled headless set screws, cut thread, 80 and 10 per cent off list
Upset hex. head cap screws, U. S. S. thread, 80, 10, 10 and 5 per cent off list
Upset hex. head cap screws, S. A. E. thread, 80, 10, 10 and 5 per cent off list
Milled studs .....75 and 10 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$35.50
Forging billets, ordinary carbons	40.50
Sheet bars, Bessemer	$37.00 to $37.50
Sheet bars, open hearth	$37.00 to $37.50
Slabs	35.50
*Wire rods, common soft, base, No. 5 to ⅜-in.	48.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	1.90c. to 2c.
Skelp, sheared, per lb.	1.90c. to 2c.
Skelp, universal, per lb.	1.90c. to 2c.

*Chicago mill base is $50.00. Cleveland mill base, $48.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100*(1¼% Nickel, 10 to 20 per cent Carbon)	$3.00
2300 (3½% Nickel)	4.75
2500 (5% Nickel)	$6.25 to 6.50
3100 (Nickel Chromium)	3.65
3200 (Nickel Chromium)	5.50
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.50 to 6.75
5100 (Chromium Steel)	3.50
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vandium bars)	4.25
6100 (Chromium Vanadium spring steel)	4.25
9250 (Silicon Manganese spring steel)	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4c.
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.20—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

Freight Rates on Finished Products from Chicago to Various Consuming Points

CONTINUING the publication of freight rates on finished steel products, THE IRON AGE *this week presents the rates on plates, bars, angles, channels, rivets, sheets, beams, tees and zees from Chicago to various destinations throughout the United States.*

Rates on Finished Steel from Chicago to Various Consuming Points

	Angles, Bars, Channels, Plates, Rivets and Sheets	Beams, Tees and Zees
Aberdeen, S. D.	$0.565	$0.565
Akron, Ohio	0.30	0.30
Anderson, Ind.	0.24	0.24
Ashland, Ky.	0.32	0.32
Atlanta, Ga.	0.58	0.58
Baltimore, Md.	0.535	0.535
Beaumont, Tex.—		
All rail	0.68	0.75
Rivets	0.72	...
Rail and river	0.56	0.635
Plates	0.455	...
Rivets	0.635	...
Birmingham, Ala.	0.53	0.63
Canton, Ohio	0.31	0.31
Caspar, Wyo.	0.95	0.95
Sheets thinner than 16 gage	1.00	...
Chattanooga, Tenn.	0.49	0.49
Cincinnati, Ohio	0.28	0.28
Cleveland, Ohio	0.30	0.30
Columbus, Ohio	0.29	0.29
Dallas, Tex.	0.84	0.84
Dayton, Ohio	0.275	0.275
Denver, Colo.	0.83	0.83
Des Moines, Iowa	0.295	0.295
Detroit, Mich.	0.275	0.275
Duluth, Minn.	0.305	0.305
Evansville, Ind.	0.235	0.235
Flint, Mich.	0.29	0.29
Fort Wayne, Ind.	0.22	0.22
Galveston, Tex.—		
All rail	0.68	0.75
Rivets	0.72	...
Rail and river	0.56	0.635
Plates	0.455	...
Rivets	0.635	...
Hammond, Ind.	0.025	0.025
Houston, Tex.—		
All rail	0.68	0.75
Rivets	0.72	...
Rail and river	0.56	0.635
Plates	0.455	...
Rivets	0.635	...
Hutchison, Kan.	0.805	0.805
Plates and sheets	0.765	...
Idaho common points	1.00	1.00
Indianapolis, Ind.	*0.155	0.25
Jackson, Miss.—		
All rail	0.53	0.53
Rail and river	0.44	0.44
Kansas City, Mo.	0.415	0.415
Kokomo, Ind.	0.215	0.215
Leavenworth, Kan.	0.415	0.415
Little Rock, Ark.—		
All rail	0.51	0.56
Rail and river	0.44	0.49
Los Angeles, Cal.—		
All rail	1.00	1.00
Rail, river and ocean	0.80	0.80
Louisville, Ky.	0.30	0.30
Mansfield, Ohio	0.285	0.285
Memphis, Tenn.—		
All rail	0.42	0.42
Rail and river	0.35	0.35
Milwaukee, Wis.	0.08	0.08
Minneapolis, Minn.	0.275	0.275
Mobile, Ala.—		
All rail	0.57	0.57
Rail and river	0.47	0.47
Moline, Ill.	†0.155	0.175
Montana common points	1.00	1.00
Morgantown, W. Va.	0.36	0.36
Muncie, Ind.	0.25	0.25
Muskogee, Okla.	0.69	0.76
New Orleans, La.—		
All rail	0.57	0.57
Rail and river	0.47	0.47
Omaha, Neb.	0.415	0.415
Peoria, Ill.	†0.13	0.155
Phoenix, Ariz.	1.00	1.00
Portland, Ore.—		
All rail	1.00	1.00
Rail, river and ocean	0.80	0.80
Portsmouth, Ohio	0.32	0.32
Pueblo, Colo.	0.83	0.83
Rawlins, Wyo.	0.95	0.95
Sheets thinner than 16 gage	1.00	1.00
St. Louis, Mo.	0.175	0.175
St. Paul, Minn.	0.275	0.275
San Francisco, Cal.—		
All rail	1.00	1.00
Rail, river and ocean	0.80	0.80
Shreveport, La.—		
All rail	0.60	0.66
Rail and river	0.51	0.57
Sioux City, Iowa	0.415	0.415
Smackover, Ark.—		
All rail	0.58	0.63
Rail and river	0.51	0.56
South Bend, Ind.	0.13	0.13
Springfield, Ill.	†0.155	0.175
Terre Haute, Ind.	*0.155	0.24
Toledo, Ohio	0.265	0.265
Topeka, Kan.	0.51	0.51
Torrence, Cal.	1.00	1.00
Tulsa, Okla.	0.69	0.76
Utah common points	0.95	0.95
Washington common points	1.00	1.00
Wichita, Kan.	0.805	0.805
Plates and sheets	0.765	...
Zanesville, Ohio	0.31	0.31

*Will not apply on angles or channels; "beam" rates apply.

†Will not apply on channels; "beam" rates apply.

Lake Superior Iron Ore Shipments for the Season

CLEVELAND, Dec. 2.—Iron ore shipments by water during 1924 were 42,623,572 gross tons. Shipments during November were 2,882,108 tons as compared with 4,938,249 tons during November last year. The total movement up to Dec. 1 was 42,614,666 tons. One cargo was shipped from Escanaba this week, this being the last cargo of the season and the only one to be shipped this month. This cargo is 8906 tons.

The movement this season compares with 59,036,705 tons shipped by water last year, and is practically the same as in 1922, when the total movement by water was 42,613,229. The record was made in 1916 with a movement by water of 64,734,198 tons. The water movement this season shows a falling off of 27.8 per cent as compared with last year.

	Shipments in 1924	Season 1923
Escanaba	*4,235,763	5,607,411
Marquette	2,516,548	2,789,285
Ashland	4,807,565	6,237,449
Superior	13,355,214	17,820,476
Duluth	12,882,082	20,163,619
Two Harbors	4,817,494	6,418,464
Total	42,614,666	59,036,704
*One cargo shipped from Escanaba in December	8,906	
Total	42,623,572	

Increased Business at Youngstown

YOUNGSTOWN, Dec. 2.—Officials of the Trumbull Steel Co. at Warren report the receipt of new business in considerable volume. Orders on several days recently aggregated 5000 tons per day, against a maximum daily production capacity of 1500 tons. The company expects to continue capacity production to the end of the year.

Reconstruction of six sheet mills in the group of 12 at the Thomas works at Niles of the Thomas Sheet Steel Co. has been completed, and the machinery is being given the initial tryout. The group of 12 units has now been modernized. The additional mills will be operated within a short time. Officials say the company has enough unfilled tonnage on its books to operate at capacity for an indefinite period.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
Nov.	Lake	Electro-lytic*	New York	New York	St. Louis	New York	St. Louis
26.....	14.00	13.75	54.50	9.00	8.60	7.30	6.95
28.....	14.12½	13.75	54.80	9.00	8.60	7.40	7.05
29.....	14.12½	13.75	....	9.00	8.60	7.40	7.05
Dec.							
1.....	14.25	13.87½	55.25	9.00	8.60	7.42½	7.07½
2.....	14.25	13.87½	55.12½	9.00	8.60	7.45	7.10

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Dec. 2.

The markets all continue strong with demand of fair proportions. Copper is higher than at any time in many weeks. Tin continues to advance on good buying by consumers. The lead market is quiet and steady. Zinc prices have advanced sharply with buying excellent.

Copper.—Electrolytic copper has finally broken through the 14c. level and apparently is unobtainable now at less than 14.12½c., delivered, for December, with practically all producers asking 14.25c., delivered, for positions early in the year. Consumers are apparently convinced that metal below 14c. is no longer available and are buying a little more freely, although the volume is by no means heavy. Producers of finished products report better business and inquiry for the virgin metal is broadening. Demand for export is also of good proportions with sales made yesterday and today at not less than 14.10c., f.a.s. Lake copper is quoted at 14.25c., delivered.

Copper Averages.—The average price of Lake copper for the month of November, based on daily quotations in THE IRON AGE, was 13.88c. The average price of electrolytic copper was 13.59c., refinery, or 13.84c., delivered.

Tin.—Consumers are believed to be pretty well covered for December shipment out of New York, but must evidently buy some for January and considerable for further future delivery. This is the consensus of market opinion as December opens. A good volume of orders for tin plate for the first half has been taken by producers, particularly for export. The week has been a fairly active one. On Nov. 25 total sales were about 500 tons, the feature of that day being that there were still some sellers at the end of the day, indicating possibly the liquidation of bull accounts. On Nov. 26 about 150 tons changed hands in the morning, the market closing dull, due probably to the approaching holiday. On Nov. 28 about 500 tons changed hands, most of it being January arrivals, the price range being 54.75c. to 54.90c., with tin plate makers the best buyers. A little business was done on Saturday, Nov. 29, with 150 tons sold yesterday. The market today was quiet with spot Straits tin quoted at 55.12½c., New York. London prices today were a little lower than yesterday, but about £5 per ton higher than a week ago, with spot standard quoted at £260 10s., future standard at £263 5s. and spot Straits at £262 17s. 6d. The Singapore market yesterday was £266 15s., with large sales reported. A disappointing feature is the heavy shipments for November from the Straits of 8188 tons, which is larger than was expected and which may increase the visible supply. Arrivals for the month of November have been 5460 tons and deliveries into consumption 5790 tons, with 1349 tons in stock and 740 tons in landing on Nov. 30.

Lead.—This market is the quietest of all with demand only fair but with prices steady. The leading interest maintains its contract price of 8.65c., New York, but is believed to be taking few orders. In the outside market prices are practically unchanged at 9c., New York, and at a range of 8.40c. to 8.76c., St. Louis, depending on the seller and buyer involved.

Zinc.—Prime Western zinc is selling at the highest price of the year. Due to good buying and the firm attitude of sellers as well as higher prices in London, slab zinc is quoted today at 7.10c., St. Louis, or 7.45c., New York, an advance of ¼c. in the week. Buying by galvanizers is reported exceedingly good with one mill operating at capacity. There is also a good foreign demand.

Nickel.—Shot and ingot nickel are quoted unchanged in wholesale lots at 29c. to 30c. per lb., with electrolytic nickel quoted at 33c.

Antimony.—Offerings of Chinese metal as low as 13.50c. having been absorbed, the quotation is again higher at 14.25c. to 14.50c. per lb., duty paid, New York.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c., duty paid, delivered.

Old Metals.—The market is strong and business is active. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	13.50
Copper, heavy and wire	12.50
Copper, light and bottoms	11.25
Heavy machine composition	10.50
Brass, heavy	9.00
Brass, light	7.50
No. 1 red brass or composition turnings	9.00
No. 1 yellow rod brass turnings	9.00
Lead heavy	8.25
Lead, tea	7.00
Zinc	4.25
Cast aluminum	17.50
Sheet aluminum	17.50

Chicago

DEC. 2.—Copper, tin and zinc have advanced, while lead and antimony have declined. Copper is in fair demand, but derives its strength largely from the fact that little material remains in second hands and producers are holding firm. Sales of zinc are steady, but the decline in lead is hard to understand. It is said that certain producers have released small quantities of lead at concessions for the specific purpose of preventing too rapid an advance of prices. It will be recalled that a year ago a sharp advance was followed by a very decided decline. News that several shipments of antimony are under way from China accounts for the easier condition of that metal. Among the old metals there have been advances in copper and brass grades, zinc and tin foil and a decline in lead pipe. We quote, in carload lots: Lake copper, 14.50c.; tin, 56.50c.; lead, 8.80c.; spelter, 7.15c.; in less than carload lots, antimony, 16c. On old metals we quote copper wire, crucible shapes and copper clips, 11.50c.; copper bottoms, 9.75c.; red brass, 9c.; yellow brass, 7.50c.; lead pipe, 7.50c.; zinc, 4.37½c.; pewter, No. 1, 26c.; tin foil, 36c.; block tin, 43c.; all buying prices for less than carload lots.

Foundry Company Wins Decision

BUFFALO, Dec. 1—The New York State Court of Appeals has unanimously affirmed lower court decisions requiring the city council to permit Kensington-Davis Corporation to enlarge its foundry at 144 Kensington Avenue. A year ago when the firm applied for a permit, neighboring residents objected. The council denied the permit. The foundry obtained an order in the Supreme Court compelling the council to grant the permit to build the addition. The city appealed to the Appellate Division, which affirmed the lower court ruling unanimously. The council then again rejected the advice of the corporation counsel and appealed to the Court of Appeals.

W. J. Rainey, Inc., House Building, Pittsburgh, has voted not to rebuild the machine shops at its coal and coke plant at Mount Braddock, near Connellsville, Pa., recently destroyed by fire with loss reported at $100,000. Work will be transferred to the other shops of the company, and contracted for in outside plants.

The Aluminum Ore Co., a subsidiary of the Aluminum Co. of America, has purchased the Fairview Fluor Spar & Lead Co., which has properties at Rosiclare, Ill., and at Franklin, Ky. The new acquisition will be operated as a separate subsidiary under the name of the Franklin Fluor Spar Co.

PERSONAL

Antony C. Meyjes will retire from the editorship of the London *Ironmonger* at the end of this month. He has held that post since 1898 and for the past four years has been also a director of the publishing company. Mr. Meyjes was born in Holland and was educated in his native country and in Germany and Belgium. As a young man he went to England and was for a time engaged as foreign correspondent with a firm of export merchants, but soon turned to journalism. He is one of the oldest members of the English Institute of Journalists, of the Iron and Steel Institute, London, and of the Institute of Metals. He will be remembered by many in the steel industry on this side as a member of the Iron and Steel Institute party that visited the United States in October, 1904. His editorial comment has always been vigorous, not infrequently running in a satirical vein.

Joseph G. Butler, Jr., veteran iron and steel manufacturer of the Mahoning Valley, is undaunted by the encroachments of the years, as is shown by his construction of dwellings at Warren, 15 miles west of Youngstown. Mr. Butler recently purchased a tract of land in Warren, upon which he is building homes for workmen, and is planning additional construction. His plans for the enlargement of the Butler Art Institute at Youngstown and its enrichment by the addition of valuable paintings, indicate that Mr. Butler is retaining, in spite of the restraining influences of time, a keen and lively interest in his community and his neighbors. He will be 84 years of age on the twenty-first of this month.

Walter N. Crafts has recently become associated with the American Chain Co., as works manager of the Reading Steel Casting Co., Reading, Pa. During Mr. Crafts, connection with the steel casting and forging industry previous to the war and in later years in Cleveland, he developed a special type of electric furnace for steel making purposes. For the past five years he has been general manager of the Canadian Electric Steel Co., Ltd., of Montreal, and during the war period was general superintendent of the Toronto plant of the British Forgings, Ltd., the largest producer of electric furnace steel for shells.

Charles S. Garland, who has been manager of the coke department of Hickman, Williams & Co., with headquarters at the Pittsburgh offices of the company, has been appointed New York district manager with offices in the Equitable Building, that city. Mr. Garland was graduated from Yale University with the class of 1920 and soon afterward became affiliated with Hickman, Williams & Co. He served as a lieutenant of artillery in the World War. He was one of the American tennis team that went to England in 1920 and brought back the Davis cup. D. H. Goodrich, who was assistant manager of the coke department, has been made manager of that depaartment. S. Davidson Herron, Chicago district manager of the A. M. Byers Co., Pittsburgh, has taken the position of Philadelphia district manager for Hickman, Williams & Co., with headquarters in the Widener Building. Mr. Herron was graduated from Princeton with the class of 1918 and has been with the A. M. Byers Co. since shortly after his graduation, serving in the general sales department in Pittsburgh before going to Chicago about four years ago.

Stoddard B. Martin, who was for ten years with the Windsor Machine Co. and its successor the National Acme Co., spending a major portion of this time with the Gridley interests in France, is now representing the Cone Automatic Machine Co. of Windsor, Vt. His headquarters are at 1899 East Eighty-second Street, Cleveland.

R. A. Mitchell, formerly assistant manager of the Chicago office has been appointed manager of the San Francisco office of R. & J. Dick Co., Inc., manufacturer of belting, transmission and factory equipment, Passaic, N. J.

J. W. Schofield, formerly in the executive department of the Pittsburgh Crucible Steel Co., Pittsburgh, and a graduate of the Carnegie Institute of Technology, is now a member of the sales department of the Pacific Sheet Steel Co., San Francisco.

J. B. Marks has been appointed assistant to the president of the Colorado Fuel & Iron Co., effective Dec. 1. He will continue to act as purchasing agent.

Alonzo B. Sherow, export manager of J. R. Larkin & Co., New York, has resigned and will shortly announce his future plans through this column.

Commissioner Vernon Van Fleet, of Indiana, has been made chairman of the Federal Trade Commission, effective Dec. 1. He succeeds Houston F. Thompson in that position and was advanced in accordance with the system of rotation practised by the commission in naming its chairman.

Malcolm Fleming, for several years representative in the Chicago district for Galey & Lord, Inc., manufacturer of cotton print cloth, New York, will assume active management of the Cincinnati office of Hickman, Williams & Co. on Dec. 15, succeeding E. P. Hettiger, who has resigned from the company to devote his time to special interests.

T. R. Lawrence, for the past seven years identified with the Motch & Merryweather Machinery Co., Cleveland, joined the sales force of the Marshall & Huschart Machinery Co., Chicago.

G. P. Fisher, foundry superintendent of the Whiting Corporation, Harvey, Ill., will deliver an address before the Chicago Foundrymen's Club at the City Club, Chicago, Monday evening, Dec. 8. His subject will be "Twenty-five Years of Progress in Mechanical Equipment for the Foundry."

John H. Becker, for many years connected with the Cincinnati office of the Matthew-Addy Co., has joined the sales force of Walter, Wallingford & Co., pig iron merchants, with offices in Cincinnati, Chicago and Pittsburgh. Mr. Becker will travel the territory comprising Hamilton, Middletown, Dayton and upper Ohio River points.

Stephen McGovern has joined the sales force of the Domhoff & Joyce Co. and will be connected with the St. Louis office. He has been with the Matthew-Addy Co. for the past nine years and previous to that was with the Southern Railroad.

Wayne Calhoun has been appointed sales manager of the Estate Stove Co., Hamilton, Ohio, having assumed his duties Dec. 1.

Dr. Zay Jeffries head of the research bureau of the Aluminum Co. of America, Cleveland, was the speaker at the monthly meeting of the Pittsburgh Chapter, American Society for Steel Treating, at the Fort Pitt Hotel, Pittsburgh, Tuesday evening, Dec. 2. His subject was, "More About Steel."

Charles K. Hardy, Jr., vice-president, director and district manager, has resigned from the Wickwire-Spencer Steel Corporation. G. A. Merkt, chief engineer; Winthrop G. Hall, assistant to district manager; Victor D. Grabell, assistant superintendent of the Morgan Works, and Palmer Collins, assistant to chief engineer, also have resigned. E. C. Bowers, vice-president, previously attached to the New York office, will assume the duties of district manager. It is understood that Mr. Hardy plans to go with another wire company.

Freight car loadings for the week ended Nov. 22, at 1,010,122 cars, make the eleventh 1,000,000-car week in 1924. Except for the weeks containing labor day and election day, no week since late August has fallen below 1,000,000 cars. Never before have the 1,000,000-car weeks extended so late into the autumn.

OBITUARY

GEORGE W. BAUM, a director and a member of the executive committee of the Mackintosh-Hemphill Co., Pittsburgh, died suddenly at his home in that city, Nov. 26, of cerebral hemorrhage. Mr. Baum was born in Pittsburgh in 1856 and came of a family that was prominent in the founding of his native city. He was identified with the Mackintosh-Hemphill Co. for about 20 years, and for a number of years was vice-president of Mackintosh, Hemphill & Co., the name of the company before it absorbed the A. Garrison Foundry Co., and the Pittsburgh Iron & Steel Foundries Co. Mr. Baum was active in the civic and business affairs of Pittsburgh. Besides Mrs. Baum, he is survived by a daughter and two sons, Donald H. Baum, who is secretary and assistant treasurer, as well as a director of the Mackintosh-Hemphill Co., and Alden H. Baum, who is assistant to the vice-president in charge of operations of the company; also a sister and a brother.

JOSEPH P. OUERBACKER, founder of the O. K. Stove & Range Co., Louisville, Ky., and president of the company until his retirement 16 years ago, died at his home in Louisville, Nov. 24, aged 81. He was born at Leavenworth, Ind., and moved to Louisville at an early age, joining the manufacturing firm of Lithgow & Co., of which he later was general manager. With the late J. W. Vancleave, he organized the O. K. Stove & Range Co., and although not active in its management, retained his interest in the organization until his death.

FREDERICK C. STIMMEL, boiler sales manager of the Casey-Hedges Co., with which he had been identified for more than 25 years, died on Nov. 16 at Philadelphia.

MONROE PATTERSON, secretary-treasurer Patterson Foundry & Machine Co., East Liverpool, Ohio, died on Nov. 22.

GEORGE H. VAN NORMAN, for the last eight years associated with his brothers in the Van Norman Machine Tool Co., Springfield, Mass., died on Nov. 23 at his home in that city, in his sixty-third year.

T. W. STINSON, consulting engineer with the mechanical engineering department of the Public Service Production Co., Newark, N. J., died on Nov. 27.

EDWARD J. BURNS, chief accountant of the Rome Wire Co., Rome, N. Y., died at his home in that city Nov. 29, following an operation for appendicitis. He was 30 years of age and had been connected with the Rome Wire Co. for the past 12 years.

ANDREW H. MENEELY, head of the Meneely Bell Co., Watervliet, N. Y., manufacturer of church bells and equipment, died at his home in that city on Nov. 29, following a prolonged illness. The Meneely company was established by his grandfather in 1826.

MACHINERY SHIPMENTS TO JAPAN

Substantial Gain in First Half of 1924 Over Previous Year—Metal-Working Machinery Exports Jump 78 Per Cent

Reaching $6,314,516 for the six-month period ended June 30, 1924, industrial machinery exports from the United States to Japan have increased approximately 17 per cent over the corresponding period of 1923, when shipments amounted to $5,387,710, according to the Industrial Machinery Division of the Department of Commerce. This is a partial recovery from the decline in 1923, when exports of American machinery to Japan dropped nearly $2,500,000 from the $14,256,017 for all of 1922. Types of machinery which have shown favorable increases during the current year are power-generating machinery, except electric, construction and conveying machinery, metal-working machinery, and other miscellaneous industrial equipment.

Exports of metal-working machinery, which increased slightly in 1923 over 1922, increased 78 per cent in the first half of 1924 over the same period in 1923. Exports of lathes nearly doubled during these periods; exports of milling machines gained from $9,975 to $68,019, boring and drilling machines from $14,890 to $52,829 and thread-cutting and screw machines from $6,846 to $51,836.

French Iron and Steel Output and Foreign Trade Show Gains

PARIS, FRANCE, Nov. 18.—Figures for production in September and for imports and exports in the first nine months of the year follow.

Trade in First Nine Months of 1924

Pig iron imports were 34,215 tons (45,359 tons in same period of 1923); exports were 549,933 tons (436,127). Ferroalloys imported amounted to 7584 tons (4149 tons); exports, 14,436 tons (15,928 tons). Iron and steel imports were 537,860 tons (393,056 tons); exports, 1,675,575 tons (1,311,500 tons). In September 5000 tons of pig iron and 621 tons of steel rails were shipped from France to the United States.

Iron and Steel Production in September

On Oct. 1 there were 136 furnaces in blast in France, 3 more than on Sept. 1. Another 37 were ready to be blown in (unchanged) and 47 were under repairs or reconstruction (3 less). The output of pig iron in September was 641,453 metric tons (as compared with 655,829 tons in August). This included 134,630 tons of foundry iron (134,380 tons in August) and 457,419 tons of basic (462,062 tons in August).

French production of steel in September was 598,327 tons (against 581,715 tons in August); of which 583,786 tons were ingots and 14,541 tons were castings. The output consisted of 389,265 tons of basic steel (377,083 tons in August) and 195,504 tons of open-hearth steel (191,843 tons in August).

Open-Hearth Furnaces and Soaking Pits to Be Built for the Ford Motor Co.

PITTSBURGH, Dec. 2.—Negotiations have virtually been completed between the Ford Motor Co. and the S. R. Smythe Co., Pittsburgh, whereby the latter will build four 100-ton open-hearth furnaces and four 4-hole soaking pits for the Ford company.

It is understood that the Ford company is planning to build 34 100-ton open-hearth furnaces and to install 12 50-ton electric furnaces, the latter to be used chiefly in duplexing. The soaking pits, besides being of unusual size, are designed especially for the use of coke oven gas.

Sale of Warships

An unusual note was struck in the advertisement last week in New York newspapers of the proposed sale of three Portuguese war vessels, two being cruisers and the other a gunboat. These are old ships whose usefulness has been outworn and they are now to be turned into scrap. Bids will be opened Dec. 20 in Lisbon, Portugal; proposals being due in Lisbon on or before Dec. 15, together with a "deposit of guarantee," varying with the ship which it is desired to purchase.

Strengthening of the pig iron market continues to improve the position of the Struthers Furnace Co., a merchant iron interest operating a stack at Struthers, Mahoning County, which asked 30 days of grace on payment of bond interest due Nov. 1. The company has 70,000 tons of foundry and 10,000 tons of basic iron piled in its yard, from which it hopes to realize a substantial amount.

FABRICATED STEEL BUSINESS

Activity Pronounced with Bookings of 44,000 Tons and Fresh Inquiries of 28,000 Tons

With awards last week of some 44,000 tons, the weekly rate of structural steel bookings since the election, on the basis of reports coming to THE IRON AGE, appears to be over two and one-half times the weekly average for the four weeks preceding election. Similarly new inquiries, amounting to 28,000 tons, show an average for the last four weeks one-half greater than that for the preceding four weeks.

Connecticut General Life Insurance Co., Hartford, Conn., office building, 1600 tons, to Levering & Garrigues Co.

Public schools Nos. 40 and 41, New York, about 450 tons each, to Hedden Iron Construction Co.

Parish Mfg. Co., Reading, Pa., building, 1000 tons, to Belmont Iron Works.

Norfolk & Western Railroad, bridge at Roanoke, Va., 500 tons, to Virginia Bridge & Iron Works.

Apartment building, Madison Avenue and Eighty-fifth Street, New York, 800 tons, to A. E. Norton, Inc.

Apartment building, Park Avenue and Seventy-fourth Street, New York, 1000 tons, to Taylor-Fichter Steel Construction Co.

St. Johns Parochial School, New York, 300 tons, to George A. Just Co.

E. L. Phillips Co., New York, transmission towers at Riverhead, L. I., 925 tons, to Lehigh Structural Steel Co.

Starrett Brothers, New York, building at Eighth Avenue and Thirty-fourth Street, New York, 7000 tons, to Hedden Iron Construction Co.

Apartment building, West Seventy-ninth Street, New York, 800 tons, to Harris Structural Steel Co.

High school, Lynn, Mass., 500 tons; Terry warehouse, Ansonia, Conn., 125 tons; Union Furniture Co., Troy, N. Y., warehouse, 250 tons; John Harvard Apartments, Cambridge, Mass., 150 tons; Hartford Seminary, Hartford, Conn., buildings, 100 tons; U. S. Veterans' Hospital, Rutland, Vt., 100 tons; Dunlap office building, Springfield, Mass., 200 tons; Moore & Thompson Paper Co., Bellows Falls, Vt., factory, 100 tons; Savoy Hotel, Hartford, Conn., 100 tons; Lenox Theater, Hartford, 150 tons, all to the Palmer Steel Co.

Boston, bridge, 425 tons, to Bethlehem Steel Co.

Apartment house, Boston, 250 tons, to New England Structural Co.

Theater, Boston, 226 tons, to New England Structural Co.

Bell Telephone Co. of Ohio, Huron Road exchange building, Cleveland, 8000 tons, to American Bridge Co.

Bell Telephone Co. of Ohio, exchange building, Toledo, 2000 tons, to American Bridge Co.

Pennsylvania Lubricating Co., Pittsburgh, building, 300 tons, to American Bridge Co.

Sugar mill in Cuba, 450 tons, to Smith Gas Engineering Co.

International & Great Northern Railway, oil storage tanks, 1200 tons, to Kansas City Structural Steel Co.

Garage, Detroit, 1080 tons, to Whitehead & Kales.

Santa Fe Railroad, Argentine, Kan., elevator, 800 tons, to Kansas City Structural Steel Co.

Belmont Theater, Chicago, 800 tons, to American Bridge Co.

Western Pacific, bridges over Snake River near Elko, Nev., 750 tons, to Virginia Bridge & Iron Co.

Municipal Pier No. 2, San Diego, Cal., 650 tons, to Moore Dry Dock Co.

Sokol Slavsky gymnasium and theater, Cicero, Ill., 585 tons, sublet by American Architectural Iron Works to American Bridge Co.

Southern California Telephone Co., Los Angeles, Garfield Building, 420 tons, to Llewellyn Iron Works.

Brady, Neb., bridge, 400 tons, to Omaha Steel Works.

Lubliner & Trinz, West Madison Street, Chicago, theater, 320 tons, to Wendnagel & Co.

Washburn high school, Minneapolis, 197 tons, to Crown Iron Works.

Masonic Temple, Waterloo, Iowa, 140 tons, sublet by Rock Island Bridge & Iron Works to American Bridge Co.

Glens Falls Portland Cement Co., Glens Falls, N. Y., storage building, 130 tons, to Jones & Laughlin Steel Corporation.

City of Baltimore, building for police headquarters, 1700 tons; Sinclair & Griegg, Philadelphia, low bidder.

National Tube Co., ore bridge at Lorain, Ohio, 600 tons, to Brown Hoisting Machinery Co.

Pennsylvania Railroad, car dumper at Sandusky, Ohio, 600 tons, to Heyl & Patterson Co.

Cleveland Electric Illuminating Co., power house at Avon, Ohio, 5000 tons, to American Bridge Co.

Apartment house, Toledo, Ohio, 450 tons, to Bellefontaine Bridge Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

French Institute, 22 East Sixtieth Street, New York, small tonnage.

Bing & Bing, New York, 15-story apartment building, West End Avenue and Seventy-second Street, 1000 tons.

Loft building, 14 stories, 127 West Twenty-eighth Street, New York, 300 tons.

Arthur Brisbane, 30 story apartment hotel, Fifth Avenue and Fifty-seventh Street, New York, 3000 to 4000 tons.

Office building, Crescent and James Streets, Long Island City, New York, small tonnage.

Philadelphia-Camden Bridge, Camden, N. J., approach, 1400 tons of structural steel and 250 tons of reinforcing bars, bids to be in Dec. 17.

Long Island Railroad, Brooklyn, N. Y., bridge in Long Island City, 200 tons.

Glen Alden Coal Co., Nanticoke, Pa., addition to power house, 1200 tons.

Consolidated Gas Co. of Baltimore, Md., addition to power house at Holtwood, Pa., 200 tons.

Hershey Chocolate Co., Hershey, Pa., building, 1700 tons.

Virginian Railway, inspection building at Mullins, W. Va., 200 tons.

Pennsylvania Railroad, bridge in Indiana, 200 tons.

Houston, Tex., grain elevator, bids in.

Office building, Worcester, Mass., 350 tons.

Union Gas & Electric Co., Cincinnati, subsidiary of Columbia Gas Co., addition to power house at Miami Fort, 570 tons, reported last week awarded to Fort Pitt Bridge Works, has not been awarded.

Tutweiler Hotel, Birmingham, addition, 450 tons, bids close Dec. 10.

Indianapolis, bus terminal, 1100 tons, bids to be asked shortly by Vonnegut, Bohn & Mueller, architects.

Masonic Temple, Cincinnati, estimated 2000 tons, plans prepared and bids expected about Jan. 1. Harry Hake is architect.

Lock No. 51, Ohio River, near Golconda, Ill., 750 tons, bids opened Jan. 12, at U. S. Engineers' Office, Louisville.

Bridge work in connection with an irrigation project, Merced, Cal., 6000 tons.

Woodward Tiernan Printing Co., St. Louis, plant, 265 tons, general contract awarded to Fruin Colnon Contracting Co.

Harbor Commissioners, San Francisco, pier, 1000 tons, and warehouse, 800 tons, bids open Dec. 4.

Elks' Club, Oakland, Cal., 2000 tons.

Central National Bank, Oakland, Cal., 2000 tons.

Akron Enterprise Co., Akron, Ohio, Keith Theater and office building, 500 tons.

Garage, city of Cleveland, 200 tons.

German Exports and Imports

BERLIN, GERMANY, Nov. 19.—Foreign trade in iron and steel in the first nine months of 1924 was (in metric tons):

	Imports	Exports
Pig iron	191,140	34,910
Scrap iron and steel	23,567	272,566
Tubes	10,234	20,453
Ingots, blooms, slabs, etc	85,037	6,822
Bars, profiles, bands	301,551	126,413
Sheets	72,925	116,733
Rails, ties, etc	99,656	11,527
Machinery	8,045	194,288
Ore, including manganese	1,243,158	224,229

German imports of iron and steel, and all goods other than machinery, totaled 852,462 tons, with exports of 1,147,053 tons, so that, if trade in scrap is deducted from both sides, there was only a small export surplus.

Coal output in the first nine months of 1924 (Saar district omitted) was 84,963,642 metric tons, against only 48,650,146 tons in the same months of 1923, when the Ruhr struggle was still proceeding, and 106,571,793 tons in the same area in 1913. Lignite production declined, being 88,621,637 tons against 94,529,795 tons in the same months of 1923. The over-supply of coal during the present year has checked the lignite production, which, however, remains much greater than in 1913 (in the present area, 64,132,226 tons).

Iron and Steel Exports Increase 16 Per Cent

October Total Well Above September and Slightly Above October, 1923—Imports a Little Below Recent Averages

WASHINGTON, Dec. 1.—Exports of iron and steel products in October, amounting to 157,071 gross tons valued at $19,244,437, reflected a substantial gain over those of September, when the total was 135,979 gross tons. The latter figure is a revision made by the Bureau of Foreign and Domestic Commerce, which had erroneously reported exports of 108 tons of ferromanganese in September, when there was no outward movement of this alloy. For the ten months ended with October exports of iron and steel aggregated 1,539,981 tons, valued at $190,864,005. Several slight revisions have been made also in the ten months' totals.

Imports of iron and steel products in October totaled 40,873 gross tons, valued at $1,825,093, as against 45,214 tons in September. For the ten months ended with October imports were 451,719 tons valued at $27,030,042. Imports of iron ore in October totaled 200,775 tons.

Black steel sheets constituted the greatest item of exports in October with a total of 17,753 tons. Japan was by far the heaviest foreign buyer, taking 14,456 tons. Of the 13,851 tons of galvanized sheets exported in October, 6185 tons went to Argentina, and of the 13,560 tons of tin plate exported in that month, 8573

Sources of American Imports of Iron Ore

(In Gross Tons)

	October		Ten Months Ended October	
	1924	1923	1924	1923
Spain	9,880	23,790	56,736	214,890
Sweden	31,461	30,243	261,355	704,867
Canada	636	566	3,413	24,525
Cuba	21,027	45,203	242,213	647,379
Chile	129,530	.....	890,975	.....
Other countries	8,241	136,640	187,109	941,925
Total	200,775	236,442	1,641,801	2,533,586

Exports of Iron and Steel

(In Gross Tons)

	October		Ten Months Ended October	
	1924	1923	1924	1923
Pig iron	3,373	3,294	37,456	26,370
Ferromanganese	.....	1,019	*3,145	4,284
Ferrosilicon	33	76	759	635
Scrap	1,773	5,186	*89,121	54,400
Ingots, blooms, billets, sheet bar, skelp	14,039	10,989	82,731	98,956
Wire rods	1,530	2,453	15,956	26,372
Bar iron	274	511	4,518	11,825
Steel bars	9,036	12,224	87,687	134,950
Alloy steel bars	243	96	2,191	2,038
Plates, iron and steel	7,996	10,022	*76,183	102,624
Sheets, galvanized	13,851	8,030	88,920	99,581
Sheets, black steel	17,753	7,858	128,713	85,273
Sheets, black iron	826	1,384	8,798	12,737
Hoops, bands, strip steel	2,078	3,493	28,652	32,350
Tin plate, terne plate, etc.	13,560	11,785	134,102	92,209
Structural shapes, plain material	8,081	5,871	*86,539	106,885
Structural material, fabricated	7,232	6,264	61,304	66,073
Steel rails	13,241	21,122	171,116	218,944
Rail fastenings, switches, frogs, etc.	3,656	3,044	*32,453	33,056
Boiler tubes, welded pipe and fittings	15,659	14,604	185,519	157,889
Cast iron pipe and fittings	3,501	2,797	24,336	23,677
Plain wire	2,078	6,052	*33,213	76,234
Barbed wire and woven wire fencing	9,636	4,055	*76,473	62,252
Wire cloth and screening	100	146	1,468	1,727
Wire rope	278	364	3,740	5,422
Wire nails	902	3,370	*19,930	32,548
All other nails and tacks	797	806	*6,246	7,554
Horseshoes	103	71	863	773
Bolts, nuts, rivets and washers, except track	1,787	1,825	15,079	16,059
Car wheels and axles	2,308	2,235	18,877	17,647
Iron castings	657	993	7,379	8,646
Steel castings	492	304	5,167	4,183
Forgings	168	168	1,347	2,622
Total	157,071	152,511	1,539,981	1,628,005

*Revised by Bureau of Foreign and Domestic Commerce.

Imports of Iron and Steel in Gross Tons

(Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
1909 to 1913, incl.	26,505	†14,132	.....	.....
1914 to 1918, incl.	23,351	4,645	3,281	‡47,155
1919 to 1921, incl.	23,901	5,708	3,710	37,115
1922	59,545	31,954	9,117	31,204
January, 1923	120,078	83,935	5,120	829
February	67,704	35,793	9,234	4,636
March	106,197	72,344	9,030	12,799
April	77,903	36,371	7,221	14,071
May	75,883	39,764	10,482	12,734
June	68,019	30,033	12,794	36,138
Six months' average	85,964	49,706	8,980	13,535
July	53,464	19,760	12,381	23,824
August	45,439	14,564	7,334	23,026
September	36,611	8,353	9,744	35,175
October	29,882	9,349	9,372	16,842
November	26,364	9,299	5,073	14,790
December	27,009	12,355	2,307	12,003
Twelve months' average	61,217	30,652	8,348	17,171
January, 1924	26,675	10,587	3,033	23,081
February	42,269	15,482	4,847	4,430
March	39,278	16,919	3,941	46,967
April	50,969	17,171	7,371	29,729
May	66,801	25,220	5,501	31,993
June	60,569	28,697	2,347	24,726
Fiscal year average	42,115	15,643	6,105	23,807
July	30,410	13,511	1,435	12,287
August	44,928	16,189	1,120	16,160
September	45,214	16,347	3,578	6,269
October	40,873	10,963	8,608	12,088
Ten months' average	45,172	17,109	4,178	21,672

*Not included in "total imports."
†Includes ferroalloys
‡Average for three years, 1916 to 1918 only.

Imports of Iron and Steel Into the United States

(In Gross Tons)

	October		Ten Months Ended October	
	1924	1923	1924	1923
Pig iron	10,962	9,349	171,086	346,166
Ferromanganese	3,193	8,502	33,089	82,452
Ferrosilicon	415	570	8,695	10,469
Scrap	4,771	3,046	50,053	154,416
Steel ingots, blooms, billets, slabs and steel bars	3,566	2,477	33,512	17,425
Rails and splice bars	3,241	2,881	37,125	25,403
Structural shapes	4,792	654	34,233	8,522
Boiler and other plates	6	89	3,253	1,663
Sheets and saw plates	426	287	2,413	2,235
Bar iron	380	343	3,706	7,131
Tubular products	2,995	407	46,756	3,695
Castings and forgings	384	131	2,526	2,307
Nails and screws	14	81	290	1,005
Tinplate	55	47	987	9,738
Bolts, nuts, rivets and washers	4	22	137	177
Wire rods	308	295	5,681	3,317
Round iron and steel wire	105	219	2,922	3,226
Flat wire and strip steel	99	149	1,841	1,011
Wire rope and insulated wire, all kinds	156	29	13,209	363
Total	40,873	29,882	451,719	681,226
Manganese ore	12,088	16,842	216,716	179,255
Iron ore	200,775	236,442	1,641,801	2,533,586
Magnesite	4,130	371	60,934	62,499

Exports by Months, July, 1923, to October, 1924

(In Gross Tons)

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914...	2,406,218	221,582	145,720
*Average, 1915 to 1918...	5,295,333	438,462	1,468,026
Calendar year 1918.....	4,239,837	309,682	258,907
Fiscal year 1920.....	4,212,732	248,126	288,766
Calendar year 1920.....	4,961,851	217,958	216,873
Fiscal year 1921.....	4,168,619	129,541	82,549
Calendar year 1921.....	2,213,042	28,305	10,363
Fiscal year 1922.....	1,721,418	28,330	63,127
Calendar year 1922.....	1,986,297	30,922	107,201
Fiscal year 1923.....	1,816,329	31,891	137,757
July	168,558	2,966	8,357
August	161,426	3,117	11,232
September	172,499	2,148	12,610
October	152,511	3,294	13,442
November	186,956	3,198	16,347
December	177,844	2,750	11,073
Calendar year 1923.....	1,992,595	32,318	152,748
January, 1924.....	247,942	3,812	8,594
February	164,820	4,773	11,463
March	123,618	4,047	2,278
April	131,276	4,117	8,275
May	154,136	4,317	4,895
June	163,770	2,057	11,178
Fiscal year 1924.....	2,009,343	40,596	119,744
July	137,481	1,796	10,363
August	134,628	4,365	6,127
September	135,979	4,799	15,473
October	157,071	3,373	15,569
Ten months.....	1,539,981	37,456	98,687

*Calendar years.

tons went to Japan, while of the 13,241 tons of steel rails exported in October, the largest shipments, totaling 4521 tons, went to Cuba.

Pig iron constituted the greatest item of imports in October, the total being 10,963 tons. Of this total 7261 tons came from British India, 2050 tons from Germany and 1100 tons from England. Of the 4792 tons of structural shapes imported in October, 3003 tons came from Belgium and 1290 tons from Germany. Imports of tubular products for that month totaled 2995 tons, a large portion of which was cast iron pipe. Cast iron pipe imports in October from France amounted to 1611 tons and from Belgium 466 tons. Of rail imports amounting to 3241 tons in October, 2292 tons came from Belgium and 893 tons from Germany.

Belgian Zinc Industry

The zinc industry in Belgium is the third in point of production in the world. Although suffering severely during the war, it has succeeded in retaining its pre-war rank with that of other zinc smelting countries. The following statistics from the United States consulate at Antwerp cover the production of crude and rolled zinc for 1913 and several post-war years:

Belgian Zinc Production Since 1913

	Crude Zinc Metric Tons	Rolled Zinc Metric Tons
1913.....	204,110	51,490
1919.....	19,860	21,305
1920.....	84,260	57,130
1921.....	66,150	39,250
1922.....	113,140	.....
1923.....	143,680	.....

A charter has been issued at Jefferson City, Mo., to the St. Louis-Kansas City Short Line Railroad Co., which purposes to build a standard gage railroad between the two cities, 238 miles in length, or 35 miles shorter than any of the other trunk lines between these points. It is proposed to build the line either for steam or electric operation, but it is understood that the latter will be used. The authorized capital stock of the company is $2,400,000, of which $240,000, the legal requirement of $1,000 per mile of projected road, is paid up. The incorporators are Lee Dunlap and F. E. Lott of Kansas City and William H. White, E. D. Smith and E. H. Lawhorn of St. Joseph, Mo.

Increased Construction in Foreign Lands Calls for Large Tonnages

WASHINGTON, Dec. 1.—The year 1924 witnessed greatly increased activity in foreign construction undertakings of all kinds, requiring large tonnages of steel bars, shapes, and plates, sheets, wire products, piping, builders' hardware, cement, asphalt, roofing materials, and miscellaneous items falling under the "minerals and metals" classification, says Luther Becker, Chief of the Iron and Steel Division, Department of Commerce, in his annual report.

It is also pointed out in the report that the number of visitors to the division more than trebled as compared with the preceding year.

In his annual report W. H. Rastall, Chief of the Industrial Machinery Division, says that the number of machinery inquiries handled by the bureau showed an increase of more than 60 per cent as compared with the preceding year. Visitors at the division numbered 217, including many leaders in the American industries and also many foreigners who were assisted in the missions that brought them to this country.

Production of Iron and Steel in Canada in October

The production of pig iron in Canada during October amounted to 28,626 gross tons, an advance of 22 per cent over the output of 23,202 tons reported for September. The output, while greater than that for the preceding month, marked a new low level for October, as the tonnage reported for the corresponding month of 1923 was 74,000 tons; 1922, 37,000 tons and in 1921, 50,000 tons. During the month of October no basic iron was made, compared with 3997 tons in September. Foundry iron rose 19 per cent to 22,909 tons; and while no malleable iron was made in September last, October's output was 5717 tons. The following table shows the total production of pig iron in Canada by months from 1921 to date.

Month	1921	1922	1923	1924
January	41,000	32,000	41,000	64,000
February	58,000	34,000	44,000	60,000
March	60,000	42,000	65,000	77,000
April	39,000	33,000	84,000	84,000
May	56,000	23,000	102,000	85,000
June	55,000	29,000	99,000	57,000
July	54,000	32,000	82,000	45,000
August	50,000	27,000	93,000	23,000
September	44,000	25,000	75,000	23,000
October	50,000	37,000	74,000	29,000
November	48,000	34,000	62,000	.....
December	40,000	36,000	60,000	.....
Total	595,000	384,000	881,000	547,000
Monthly Average ...	50,000	32,000	73,000	55,000

The production of steel ingots and castings in Canada during October advanced to 19,996 tons or 11 per cent over the 18,005 tons reported for September. Steel ingots rose to 19,061 tons, as compared with 17,044 tons in the preceding month, while steel castings shaded slightly to 935 tons in October from the 961 tons in September. The gain was largely in the greater quantity of basic open-hearth steel ingots produced. The total production of steel ingots and castings in Canada by months from 1921 to date was as follows:

Month	1921	1922	1923	1924
January	40,000	33,000	48,000	41,000
February	59,000	42,000	46,000	71,000
March	53,000	30,000	89,000	95,000
April	27,000	22,000	93,000	104,000
May	52,000	17,000	104,000	108,000
June	64,000	33,000	96,000	69,000
July	54,000	63,000	74,000	52,000
August	72,000	59,000	105,000	23,000
September	56,000	36,000	66,000	18,000
October	72,000	53,000	67,000	20,000
November	75,000	51,000	55,000	.....
December	43,000	47,000	41,000	.....
Total	667,000	486,000	884,000	601,000
Monthly Average ...	56,000	40,000	74,000	60,000

The National Association of Brass Manufacturers will hold its annual meeting at Hotel Astor, New York, Dec. 11. D. F. Grant, president United States Chamber of Commerce, will address a luncheon meeting on that date, according to an announcement by W. M. Webster, commissioner of the association.

DISTRIBUTION OF STEEL EXPORTS

Japan Takes 24,263 Tons in Five Items—Canada Takes 16,154 Tons in Seven Items

SUPPLEMENTING the tables on another page of THE IRON AGE, the distribution of exports of seven principal finished steel items appears in the tables here. This covers the outgoing tonnages of steel plates, rails, black and galvanized sheets, barbed wire, plain and galvanized wire and tin plate. The figures are for October of this year and last year and for the ten months ended Oct. 31 in each of the two years.

Canada took the bulk of the steel plates, with 6708 tons of the 7996 tons exported. The same is true for the ten-month period, when Canada absorbed 59,530 tons of the total of 76,183 tons.

Galvanized sheets were well distributed, with Argentina taking much the largest amount—6185 tons. Presumably this is part of the large shipments for overcoming the plague of locusts. In the ten months five countries took between 10,000 and 15,500 tons, these being in order of size, Canada, Japan, Philippines, Argentina and Cuba.

Japan was much the largest purchaser of black steel sheets, with 14,456 tons of the total of 17,753 tons exported. The same is true for the ten-month period, when Japan took nearly 70 per cent, with 88,442 tons out of 128,713 tons. Canada occupied second place, with 31,280 tons in ten months. This shows a marked difference from conditions in 1923, when Canada in ten months took 45,025 tons to Japan's 27,633 tons, out of a total of 85,273 tons.

Steel rails in October were sent mainly to Cuba, Canada and Colombia, Cuba taking a little more than one-third, with 4520 tons out of 13,241 tons. In the ten months Cuba took about one-fourth the total, with 43,737 tons, followed by Japan in second place, with 32,470 tons of the total of 171,116 tons.

Barbed wire in October was well scattered, although Brazil, with 3787 tons, received a much larger amount than any other country. This was nearly 40 per cent of the 9636 tons shipped. In the ten months Brazil took more than one-third, 26,134 tons out of 76,473 tons.

Distribution of plain and galvanized wire in October was widespread, no country taking a preponderant amount. Canada led, with Australia second and Mexico third. The total shipments were 2078 tons. In the ten months, when 33,213 tons were shipped, Canada led with nearly one-fourth of the total, followed by Japan, Argentina, Mexico and Brazil, all closely bunched.

Japan took about five-eighths of the tin plate shipped in September, with 8573 tons out of 13,560 tons. Japan's purchases in the ten months, while the largest of any nation, were a much smaller proportion of the total, the amount being 36,213 tons out of 134,102 tons. China and Canada followed in second and third positions in the ten-month period.

Exports from United States by Countries of Destination
(In Gross Tons)

	Steel Plates				Galvanized Sheets				Black Steel Sheets			
	October		Ten Months Ended October		October		Ten Months Ended October		October		Ten Months Ended October	
	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923
Canada	6,708	5,497	59,530	83,578	1,156	1,364	15,376	28,297	2,638	2,773	31,280	45,025
Japan	160	125	459	817	1,054	1,062	12,014	4,304	14,456	4,165	88,442	27,633
Cuba	160	78	1,258	859	1,801	1,331	10,019	11,707	99	202	815	1,655
Philippine Islands	4	2	955	570	726	771	11,669	6,234	....	....	....	176
Mexico	128	41	662	562	679	752	4,727	5,444	....	....	....	....
Argentina	....	....	....	....	6,185	63	10,691	4,326	51	18	69	1,907
Chile	....	....	....	....	57	11	1,210	2,698	....	....	....	....
Colombia	....	....	....	....	369	267	3,025	3,993	....	....	....	....
Central America	....	....	....	....	210	318	3,765	3,412	....	....	....	....

	Steel Rails				Barbed Wire				Plain and Galvanized Wire			
	October		Ten Months Ended October		October		Ten Months Ended October		October		Ten Months Ended October	
	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923
Canada	2,335	4,418	16,785	48,384	1,027	20	1,730	4,542	536	1,234	7,523	12,840
Japan	....	10,314	32,470	68,937	....	....	....	....	20	1,637	3,842	18,246
Cuba	4,520	3,189	43,737	42,537	778	438	7,064	8,314	152	150	1,511	2,187
Philippine Islands	157	141	5,323	3,750	....	....	383	....	....	....	33	....
Mexico	185	227	8,044	3,024	422	346	3,205	3,385	277	639	3,260	3,528
Argentina	....	....	....	....	893	341	9,245	7,142	4	158	3,541	11,270
Chile	491	....	9,102	5,248	....	....	20	....	26	54	26	4,053
Colombia	1,022	27	9,004	2,163	610	280	5,583	3,715	....	....	....	....
Brazil	834	570	9,999	3,716	3,787	1,003	26,134	8,114	209	326	3,221	7,001
Chosen	....	....	36	2,401	....	....	....	....	....	....	....	....
Honduras	340	655	2,967	8,245	....	....	....	....	....	....	....	....
Kwan Tung	....	....	....	11,143	....	....	....	....	....	....	....	....
Australia	....	....	....	....	384	350	2,789	2,228	366	924	2,159	6,282
British S. Africa	....	....	....	....	358	259	4,328	5,029	....	....	....	....
West Indies	....	....	....	....	....	....	....	6,153	....	....	....	....
Great Britain	....	....	....	....	....	....	....	....	....	....	1,169	....

Tin Plate:	October		10 Months Ended October	
	1924	1923	1924	1923
Canada	1,756	3,236	20,123	25,244
Japan	8,573	4,115	36,213	24,450
Cuba	336	476	4,801	4,033
Mexico	191	135	3,185	1,653
Argentina	678	347	7,816	5,071
Chile	1,089	41	2,898	1,600
Uruguay	35	37	331	3,033
China	117	1,400	23,284	7,995
British India	....	754	9,432	4,181
Hong Kong	22	....	6,347	2,071
Italy	....	....	3,964	2,266

Will Make Nails in Mexico

The Mexico Hardware Co., El Paso, Tex., whose jobbing department is in Juarez, Mexico, has installed machinery in its Juarez plant for the manufacture of wire nails. All sizes of wire nails from six to 30 penny will be made, and later the company intends adding equipment to make tacks and shoemakers' nails. The present Mexican duty on wire nails and tacks is 40 centavos a kilo, or nearly 10c. per lb. American money, and this induced the company to engage in the manufacture of nails and tacks. S. R. Silva is president.

A public hearing on power test codes for solid fuels, gas producers and speed-responsive generators will be held on Tuesday afternoon, Dec. 2, in connection with the annual meeting of the American Society of Mechanical Engineers in New York. Reprints of these codes, revised to date, may be obtained by addressing C. B. LePage, 29 West Thirty-ninth Street, New York.

According to the National Industrial Conference Board, the purchasing value of the dollar, based on cost of living figures, was 60.6c. on Oct. 15, when compared with July, 1914. The increase in cost of living since 1914 is 65 per cent. To meet this added cost of living, hourly wages are 100 per cent above 1914.

MACHINERY EXPORTS INCREASE

October Shipments 15 Per Cent Above September —Ten-Months' Sales 12 Per Cent Ahead of Last Year

WASHINGTON, Dec. 1.—Exports of machinery in October were valued at $28,094,797, against $24,460,750 in September. For the 10 months ended with October, the value was $268,738,755. Exports of metal-working machinery in October numbered 5562, valued at $834,806, against 3574, valued at $574,460, in September.

Imports of machinery in October were valued at $604,226 against $746,485 in September. For the 10 months ended with October their value was $7,711,488, against $8,842,795 for the corresponding period of last year.

Machinery Exports from the United States
(By Value)

	October, 1924	October, 1923	Ten Months Ended October, 1924	Ten Months Ended October, 1923
Locomotives	$728,260	$265,120	$4,582,998	$3,536,235
Other Steam Engines	43,704	137,755	1,638,148	1,026,589
Boilers	148,741	145,678	1,702,242	1,128,445
Accessories and Parts	341,610	433,551	3,050,021	3,232,712
Automobile Engines	178,218	541,533	2,844,407	4,776,156
Other Internal Combustion Engines	593,667	568,219	6,208,426	5,778,946
Accessories and Parts for	289,463	288,567	3,050,021	2,893,650
Electric Locomotives	61,466	18,126	2,198,745	3,010,865
Other Electric Machinery and Apparatus	728,297	894,031	6,733,825	7,151,182
Excavating Machinery	127,229	207,409	1,990,954	1,252,991
Concrete Mixers	51,318	54,728	549,618	756,412
Road Making Machinery	162,447	76,383	1,055,686	770,858
Elevators and Elevator Machinery	166,481	349,232	1,657,104	2,804,205
Mining and Quarrying Machinery	1,061,834	938,863	8,476,302	5,908,893
Oil Well Machinery	577,494	661,902	5,572,400	5,467,756
Pumps	734,688	690,654	6,107,859	6,140,528
Lathes	103,029	221,105	961,405	860,522
Boring and Drilling Machines	80,057	102,054	501,675	590,076
Planers, Shapers and Slotters	31,907	19,954	254,189	213,346
Bending and Power Presses	178,915	35,885	416,820	295,926
Gear Cutters	10,707	10,608	301,754	138,704
Milling Machines	68,953	73,198	474,850	385,138
Thread Cutting and Screw Machines	29,638	46,890	473,320	449,046
Punching and Shearing Machines	6,086	29,021	76,105	161,668
Power Hammers	36,044	8,491	208,835	131,813
Rolling Machines	.....	.....	100,875	18,849
Sharpening and Grinding Machines	166,238	69,300	1,495,776	840,598
Other Metal Working Machinery and Parts of	365,153	408,325	3,498,582	3,929,974
Textile Machinery	697,032	726,787	7,291,350	7,724,775
Sewing Machines	678,013	916,410	7,167,206	7,408,679
Shoe Machinery	184,968	86,780	1,181,851	1,138,375
Flour-Mill and Gristmill Machinery	77,040	29,716	674,431	184,203
Sugar-mill Machinery	1,945,661	1,463,237	7,046,459	4,722,731
Paper and Pulp Mill Machinery	163,352	91,118	1,789,560	1,775,923
Sawmill Machinery	84,636	36,840	477,845	544,623
Other Woodworking Machinery	102,301	359,171	1,088,013	907,460
Refrigerating and Ice Making Machinery	154,153	204,271	1,880,720	1,916,357
Air Compressors	258,373	242,172	2,501,727	2,087,245
Typewriters	1,435,674	1,049,047	12,699,414	11,259,927
Power Laundry Machinery	81,569	77,332	844,070	823,071
Typesetting Machines	293,624	276,243	2,724,680	3,070,310
Printing Presses	323,759	430,383	3,592,981	3,735,258
Agricultural Machinery and Implements	4,252,091	3,224,780	51,893,226	43,165,968
All Other Machinery and Parts	10,290,907	8,361,800	99,702,280	85,159,974
Total	$28,094,797	$24,872,679	$268,738,755	$239,276,962

Metal-Working Machinery Exports

	October, 1924 Number	October, 1924 Value	September, 1924 Number	September, 1924 Value
Lathes	61	$103,029	43	$78,757
Boring and drilling machines	197	80,057	176	49,891
Planers, shapers and slotters	18	31,907	22	17,201
Bending and power presses	75	178,915	21	33,954
Gear cutters	6	10,707	8	19,088
Milling machines	47	68,953	55	71,013
Thread-cutting and screw machines	44	29,638	74	33,299
Punching and shearing machines	16	6,086	11	2,937
Power hammers	147	36,044	22	36,139
Rolling machines	....	.....	37	13,188
Sharpening and grinding machines*	330	166,238	259	134,770
Chucks, center, lathe, drill and other metal-working tools	3,179	45,582	1,732	27,197
Pneumatic portable tools	1,442	77,650	1,114	58,026
Total	5,562	$834,806	3,574	$574,460

*Includes number of external and internal grinding machines only; "other sharpening and grinding machines" are reported now by weight instead of by number.

Imports of Machinery Into the United States
(By Value)

	October 1924	October 1923	Ten Months Ended October, 1924	Ten Months Ended October, 1923
Metal-working machine tools	$20,564	$39,406	$287,356	$332,926
Agricultural machinery and implements	130,824	15,206	1,992,014	643,541
Electrical machinery and apparatus	30,271	261,910	371,882	1,472,617
Other power generating machinery	525	99,629	84,751	1,755,817
Other machinery	280,559	289,351	3,369,479	2,197,851
Vehicles except agricultural	141,483	317,051	1,606,006	2,440,043
Total	$604,226	$1,022,553	$7,711,488	$8,842,795

Increasing Production of Iron and Steel in the Mahoning Valley

YOUNGSTOWN, Dec. 2.—In this district operations of iron and steel properties are advancing toward the capacity mark. The Republic Iron & Steel Co. has started No. 4 blast furnace in its Haselton group, while the Youngstown Sheet & Tube Co. has placed No. 2 stack at Hubbard, Trumbull County, on its active list. These resumptions give the district 26 active blast furnaces, of 45, the active stacks representing more than 60 per cent of capacity.

The Trumbull Steel Co., Carnegie Steel Co. and Sharon Steel Hoop Co. are approaching 100 per cent production capacity.

The Republic and Sheet & Tube companies have each added another open-hearth furnace, giving the former 14 active and the latter 13, steel ingot output averaging 80 per cent.

Of 127 sheet and jobbing mills in the Mahoning Valley, 89 are under power, representing about 75 per cent of capacity. The only idle plant is that of the Waddell Steel Co. at Niles, which will resume again next week following a suspension of one week.

Steel ingot production in the district averages 78 per cent, with 38 of 52 independent open-hearth furnaces melting and 25 of 30 units of Steel Corporation subsidiaries. Two independent Bessemer plants are averaging 70 per cent, and two Corporation Bessemer departments 85 per cent, a general average of about 80 per cent for the district.

Merchant bar mill capacity is engaged at a comparatively high rate, with seven of eight independent mills rolling and all 17 bar mills of the Carnegie Steel Co. divided between the Upper and Lower Union Works and the McDonald plant. The Republic company is maintaining five light bar mills in operation and the Sheet & Tube company its 9-in. and 12-in. bar units.

Active tin plate capacity represents 80 per cent of the total, with 33 of 38 independent mills under power and 70 of the 90 mills in this territory of the American Sheet & Tin Plate Co. Seven hot strip mills are running at capacity, divided between the Trumbull company and the Sharon Steel Hoop company, with cold strip units at near capacity. Seven active independent skelp mills represent about 90 per cent capacity. Twelve of 18 tube mills are in commission, and two of four plate mills.

The Continental Motors Corporation, Detroit, is increasing operations at its local plant, as well as at its Muskegon, Mich., plant. The first ten months of the present year show an increase of about 21 per cent in shipments from the first noted works, as compared with the same time a year ago, or 47,954 motors as against 39,743 in 1923. In the same time in 1924, 93,124 motors have been shipped from the Muskegon plant.

Vacation Plans for Wage Workers

(*Continued from page* 1471)

It will be readily seen, however, that in continuous process industries like petroleum manufacturing, steel works, rolling mills, and public utilities, "shutdown" vacations are impractical.

Over 65 per cent of the plans have been established in the last six years, showing the growing importance of the vacation plan in industry since the war. Table III shows that practically all of the plans varied from one another.

Table II.—Industrial Classification of Plants

	Regular Plans: Straight	Regular Plans: Graded	Shutdown Plans	Total
Automobiles	1	..	2	3
Chemicals	4	24	3	31
Clothing	2	1	7	10
Electric machinery, lamps	..	4	2	6
Food and kindred products	16	..	3	19
Iron and steel and their products	4	5	9	18
Laundry	..	1	..	1
Leather	1	..	..	1
Lumber and remanufactures	1	1	1	3
Paper products	2	2	2	6
Paper and pulp	..	1	3	4
Petroleum	20	18	..	38
Printing and publishing	2	3	..	5
Public utilities	..	8	..	8
Rubber	1	2	..	3
Textiles	1	..	1	2
Transportation	1	..	..	1
Miscellaneous—				
Brushes	..	1	1	2
Kodaks	..	1	..	1
Phonographs	..	..	1	1
Total	56	72	35	163

Among the straight or non-graded type, seven granted one week's vacation after one year's service; while four graded plans granted one week's vacation after five years' service and two weeks after ten years' service. No shutdown plans were identical, due chiefly to the fact that these plans generally grant short vacations to employees of short terms of service.

The vacation season commonly occurred in summer,

Table IV.—Size of Companies

Number of Factory Employees	Regular Plans: Straight	Regular Plans: Graded	Shutdown Plans	Total
Less than 100	4	1	2	7
100 – 500	5	4	19	28
500 – 1,000	5	4	..	9
1,000 – 1,500	3	1	2	6
1,500 – 2,000	..	7	3	10
2,000 – 5,000	3	6	3	12
5,000 – 10,000	2	2	2	6
10,000 – 20,000	4	3	..	7
Over 20,000	1	2	..	3
Data not available	2	3	..	5
Total	29	33	31	93

although in many plants it may take place throughout the year. Some vacations are segregated around the Fourth of July and Labor Day.

Vacation wages are generally based on straight rates, exclusive of overtime, and are generally paid prior to the vacation period. In plants where piece workers are involved, the period for the calculation of wages may extend from one month to an entire year.

The question of paid legal and national holidays for factory workers is a question that is increasingly important in connection with the determination of vacation plans. One company, for example, paid for legal holidays in lieu of a vacation plan. It was found that 71 per cent of the companies did not pay for legal or national holidays.

Table IV shows that shutdown plans have been generally limited to small plants with less than 500 workers, while the larger proportion of regular plans were established in plants with over 1500 employees. Seven regular plans were found in plants with between 10,000 and 20,000 employees, and three plans were in corporations employing more than 20,000 workers. The latter includes such representative companies as the Standard Oil Co. (California), the New York Telephone Co., and the Western Electric Co.

Due to service requirements, attendance features, and other restrictions, not all wage earners eligible for

Table III.—Classification of Plans by Service Requirement and Length of Vacations

A. Straight or Non-Graded Plans

Length of Service	Length of Vacation	No. of Plans	Number of Factory Employees: Total	Number Receiving Vacations	Per Cent Receiving Vacations
6 months	1 week	2	4,152	3,877	92.7
9 months	1 week	1	214	214	100.0
48 weeks	1 week	1	700	455	65.0
1 year	1 week	7	14,653(a)	12,034(a)	82.0(a)
1 year	2 weeks (½ pay)	1	10	10	100.0
1 year	2 weeks	2	20,200	13,360	66.2
2 years	1 week	3	18,366	7,066	38.4
3 years (female) 5 years (male)	1 week	2	37,500	5,000	13.3
5 years	1 week	3	3,600	1,587	44.1
10 years	1 week	1	1,240	186	15.0
15 years	1 week	1	53	2	4.0
20 years	1 week	1	(a)	(a)	(a)
20 years	2 weeks	1	9,118	301	3.3
25 years	1 week	2	4,330	373	8.6
All workers in profit sharing plan during preceding year	1 week	1	12,000	9,600	80.0

B. Graded Plans

(The only plans with common requirement and vacations are summarized below)

Length of Service	Length of Vacation	No. of Plans	Number of Factory Employees: Total	Number Receiving Vacations	Per Cent Receiving Vacations
5 years 10 years	1 week 2 weeks	4	55,425	10,817(a)	19.6
10 years 20 years	1 week 2 weeks	2	12,735	2,254	17.7

(a) Complete data not available.

vacations actually receive them, as Table V portrays. Only about 44 per cent of all the factory workers included in the study actually had paid vacations. In shutdown plans, 62 per cent received pay during the shutdown period, due to short service requirements.

The total cost of a vacation plan is hard to determine, inasmuch as a complete study must include not only an analysis of wages, but more intangible factors such as extra help hired, production efficiency and general morale. In this study the cost of vacation wages paid in relation to the total annual payroll has been ascertained with the hope of throwing some light

Table V.—Number of Factory Employees or Wage Earners and Percentage Receiving Vacations

	Regular Plans: Straight	Regular Plans: Per Cent	Regular Plans: Graded	Regular Plans: Per Cent	Shutdown Plans	Shutdown Plans: Per Cent	Total	Total: Per Cent
Number of wage earners	126,166	36.9	180,988	52.9	34,900	10.2	342,054	100.0
Number of wage earners in plants not giving data as to number receiving vacations	.....		6,213		350		6,563	
Number of wage earners covered for whom full data are available	126,166		174,775		34,550		335,491	
Number of wage earners receiving vacations	54,065	42.8	71,349	40.8	21,581	62.4	146,995	43.8

on the relative cost of vacations. This percentage refers only to the cost of vacations for factory employees and does not include vacation *salaries*. In 57 per cent of the companies where data were available, the percentage of vacation wages in relation to the total annual payroll was between 1 per cent and 2 per cent, the average being approximately 1.5 per cent. The lowest cost was 0.002 per cent and the highest, 3.34 per cent. In the latter company during a two-weeks' shutdown, employees of over six months' service received a week's pay and those with over one year's service received full pay.

In contrast with these cost percentage figures, the universal testimony of the companies was that vacations are more than fully repaid by lowered labor turnover, increased efficiency, and improved morale. In addition, the plans seemed to be generally appreciated by employees, and offered most tangible proof of better industrial relations between management and men. The accompanying quotations from letters received from a few of the companies, clearly show that the writers heartily favor vacations for employees.

In conclusion, the report shows that paid vacations for wage earners are becoming an increasingly prominent element in American industrial relations—the movement is fast approaching the interest now held by industrial medicine, accident prevention, and stock purchase. Vacations for factory workers are shown to be not only economically successful, but socially influential in the life of our nation.

Wholesale Prices Higher in October

While the Bureau of Labor Statistics records a sharp upturn in the general level of wholesale prices in October, as compared with September, there was a reduction in the prices of metal and metal products and also in fuel and lighting. The October average at 151.9, compared with 100 as the basis in 1913, is about 2 per cent above the September average at 148.8, but is 0.8 per cent below the average for October of last year at 153.1.

Decreases have occurred during the year in clothing, fuel and lighting, metals and metal products, building materials and housefurnishing goods, each of these cases showing a decrease of more than 5 per cent, the metals leading the downward procession with 10.3 per cent drop. Increases have occurred in farm products, foods and chemicals. With the exception of the metals, the changes during the year have been toward a closer approximation to the average. All items which were above the average a year ago have dropped closer to the average, while all items except metals which were below the average a year ago have gained and thus approach the average. As a result, the range between the highest and the lowest has decreased from 79 points one year ago to 68.6 points this year. Details are shown in the table.

Index Numbers of Wholesale Prices, by Groups of Commodities

(1913 = 100.0)

Group	1924 October	1924 September	1923 October	Decrease in One Year, Per Cent
Farm products	149.2	143.1	143.9	(a)3.7
Foods	151.6	147.7	148.5	(a)2.1
Cloths and clothing	188.4	186.5	198.7	5.2
Fuel and lighting	162.1	168.0	171.7	5.6
Metals and metal products	127.2	128.2	141.8	10.3
Building materials	170.7	170.7	182.2	6.3
Chemicals and drugs	132.2	130.6	129.0	(a)2.5
Housefurnishing goods	171.0	171.1	182.7	6.4
Miscellaneous	119.8	115.8	119.7	(a)0.1
All commodities	151.9	148.8	153.1	0.8

(a) Increase.

Ford Plant at St. Paul

Operations will be started March 1 on the new Ford plant at High Dam, St. Paul, Minn., according to W. B. Mayo, chief engineer of the Ford Motor Co. About 1600 men will be employed at first. Machinery will be installed in January and operations will be under way the following July. The new plant will be engaged mainly in making replacement parts.

United States exports of industrial machinery to Venezuela for 1923 totaled $1,322,978, compared with $950,783 for the preceding year, according to the Industrial Machinery Division of the Department of Commerce. This increase in business of $372,195 represents a growth of 39 per cent. Customs figures for the first half of 1924 indicate that this gain is being maintained and that there is a gradually expanding market for industrial machinery in Venzuela.

New Swedish Direct Electric Steel Process

Based upon tests which are reported to have been made on a large scale at the Hagfors Iron Works, Uddeholm Co., Sweden, the announcement is made of a new direct electric method of making steel from iron ore. The new process has been invented by a Swedish engineer, G. H. Flodin, for years associated with Gustaf De Laval, inventor of the centrifugal cream separator and the steam turbine. Gustaf Cornelius, of Stockholm, Sweden, who is closely associated with the inventor, is at the head of the Swedish interests which have obtained and control the rights for the new process. The Molecule Engineering Co., Inc., 405 Lexington Avenue, New York, of which Harry Broady is the president, represents the Swedish interests in the United States and Canada.

The Flodin process is described as a one reduction electric process in which, by means of a scientifically balanced charge, low-carbon high-grade steel as low as 0.10 per cent carbon, can be produced direct from iron ore. Details concerning the process are not yet available but it is said to be conducted in a new type of electric furnace developed by the inventor. That ferroalloys, stainless iron and other products can be produced in this furnace direct from ore is also claimed.

Heat Treatment of Automobile Parts

A talk on the "Heat Treatment of Automobile Parts" was given before the Cleveland section of the American Society of Steel Treating, Nov. 21, by J. M. Watson, metallurgist, Hupp Motor Car Corporation, Detroit. The talk, which was illustrated by motion pictures of the Hupp company's heat treating plant, was practically the same as that Mr. Watson gave at the recent annual convention of the society at Boston. After the talk Mr. Watson answered some questions relating to the heat treatment practices of the Hupp Corporation. In reply to a question regarding the heat treatment of castings, he said that his company is now annealing practically all of its small gray iron castings, these being kept in the annealing furnace a little over an hour at a maximum temperature of about 1300 deg. for 15 min. He stated that this annealing eliminated hard spots and that the experience of his plant was that there was a gain of 50 per cent in the rate of machine operations after the castings have been annealed.

Cost of Laying Brick

WASHINGTON, Dec. 1.—The November issue of the *Monthly Labor Review*, published by the Department of Labor, carries an interesting article on labor productivity and costs in certain trades, by Ethelbert Stewart, Commissioner of Labor Statistics. The field work of the investigation of the building industry was done in 1923. The average rate of pay per hour in bricklaying was found to vary in different cities from $1.01 to $1.76, while the cost of laying 1000 bricks ranged from $4.82 in Birmingham, Ala., to $14.87 in Indianapolis.

Plans of New Companies

The Empire Steam Car Corporation, 15 Laight Street, New York, recently incorporated, is developing steam car products and plans eventually to get into production on steam cars. It is at work on preliminary matters and will not be ready for definite announcement of plans until next March. W. Wenderhold is secretary.

The Tank Gas Range Corporation, Fifth Avenue Building, New York, has been organized to establish distribution centers for gas ranges manufactured by interests connected with the company. C. R. Denis is vice-president.

The Stringer Brake Service Corporation, Pottstown, Pa., has been organized to manage the entire sales of the Stringer Cable Brake Co., manufacturer of cable brake systems and brake bands. R. A. Reiff is one of the principals.

The Coleman Tube & Tool Co., Los Angeles, Cal., has been organized to manufacture tools and tubular products, but is not yet in a position to make a definite statement of plans. Address in care of Wellborn, Wellborn & Wellborn, Security Building, Los Angeles.

The Sackett Screen & Chute Co., recently organized under New Jersey laws, will take over the assets of the Sackett Screen & Chute Co. of Illinois. According to T. A. Jones, president, the officers will not go into plans for new plant or machinery at the present time.

The National Engineering & Equipment Co., Farmers Trust Building, Anderson, Ind., has been organized with $25,000 capital stock and is starting as manufacturers' representative. W. N. Durbin, previously associated with the Anderson Foundry & Machine Co., which went into the hands of a receiver when the R. L. Dollings Co. failed, is president of the new company, and R. I. Van Winkle, formerly secretary of the Anderson company is associated with him; also Linfield Myers, president of the Madison County Trust Co., and J. E. Hennings, president of the Prudential Loan Co. Mr. Durbin states that no manufacturing is being planned now, although it may be undertaken later.

The Standard Supply & Equipment Co., 143 North Warren Street, Trenton, N. J., has been organized to act as jobber in railroad, mine, mill and contractors' supplies, power transmission and automotive equipment. Frank E. Thomas is president.

The Walsh Boiler & Iron Works, 30-36 Lyman Street, Springfield, Mass., has been incorporated to take over that part of the business of the Charles C. Lewis Co., Springfield, which is devoted to repairing and installing boilers, and in a small extent to do structural iron work. Richmond Lewis is vice-president of the Lewis company.

The Plating Press Works, 145 Frelinghuysen Avenue, Newark, N. J., has been incorporated with $200,000 capital stock to operate a plating works.

The Flanagan Machinery Co. has been established at 321 Clay Street, Oakland, Cal. B. J. Flanagan, president of the new concern, was formerly treasurer and San Francisco branch manager of the Herberts Machinery Co. of San Francisco and Los Angeles, Cal. Machine tools for manufacturing plants and shops as well as used equipment will be handled.

The Bohn Aluminum & Brass Corporation, Detroit, has been organized with capital stock of $1,500,000 to take over the entire assets of the Chas. B. Bohn Foundry Co., Peninsular Smelting & Refining Co., Machon Pattern & Die Co. and the General Aluminum & Brass Mfg. Co. It purposes to deal in and manufacture non-ferrous metals of all kinds, aluminum and brass castings, bronze back babbitt lined bearings, etc. Charles B. Bohn is president, P. A. Markey, vice-president; L. G. Hooker, secretary.

Trade Changes

The Penn Steel Castings Co. has moved its New York office from 2 Rector Street to 24 State Street, Herman J. Lamb, representative.

The American Electric Switch Co., Minerva, Ohio, manufacturer of electric switches, announces sales offices are located as follows: New York, 71 Murray Street, in charge of Owen Monaghan; Philadelphia, 2401 Chestnut Street, in charge of P. T. Bradley; Pittsburgh, 1406 Keenan Building in charge of William K. Dickie; Chicago, 4123 West Kinzie Street, in charge of Fred Heynam; St. Paul, 2362 University Avenue, in charge of Fred Robinson; Indianapolis, 336 Burgess Avenue, in charge of Samuel Toole; St. Louis, 3001 Sidney Street, in charge of A. A. Switter; Cleveland, 1300 Union Trust Building, in charge of A. P. Handel; Cincinnati, 603 Southern Ohio Bank Building, in charge of Luther B. Ison; Jacksonville, Fla., 622 West Forsyth Street, in charge of R. E. Ward. J. C. Lewis is president and general manager, having taken over operations July 1. F. F. Cope is sales manager.

The Tyler Tube & Pipe Co., Washington, Pa., announces the appointment of A. M. Castle & Co. as its sales agents in San Francisco. The Castle organization maintains a large warehouse in that city.

The Morris & Bailey division, Oliver Iron & Steel Corporation, Wilson, Pa., has established down town offices at 839 Oliver building, Pittsburgh. Charles H. Forster, general manager of sales and Harry F. Devens, general manager, will make their headquarters at the new city office.

The Apex Tool & Stamping Corporation, 119 North Fort Street, Louisville, Ky., has moved to 317 Winkler Avenue, Louisville.

The Cyclops Steel Co., Titusville, manufacturer of crucible tool steels, has appointed the W. A. Gowing Co. as representative in Michigan and Toledo, Ohio.

The Barrett Sales Co., manufacturer of attaching devices for concrete, brick, marble, tile, slate, etc., Chicago, announces the appointment of the Kelley Sales Co., 77 O'Farrell Street, San Francisco, as representative in San Francisco and Northern California. A complete stock will be carried.

The Austin Co. of California has moved its San Francisco office to enlarged quarters at 244 Kearny Street and has moved its Los Angeles office to a two-story private office building at 277 East Washington Street.

The Baker-Goldstein Co., dealer in iron and steel products, 21-25 Catherine Slip, New York, has moved to 1664 Fowler Avenue, Bronx, New York.

A. Burt Champion, formerly vice-president of the Matthew Addy Co., has opened an office at 506 Olive Street, St. Louis, where he will act as general agent for pig iron, coal, coke, charcoal, fluorspar and alloys.

The Linde Air Products Co., New York, has opened two new district offices, one at 210 Dooly Block, Salt Lake City, Utah, in charge of R. L. Strobel, the other at Seattle, Wash., 304 R. R. Avenue, South, in charge of C. E. Rhein.

The Acme Wire Co., New Haven, Conn., manufacturer of fine wire, radio equipment, etc., has established a Boston office, at room 442 Chamber of Commerce Building, R. M. Nichols in charge.

The Sullivan Machinery Co., Chicago, has established a Los Angeles, Cal., office and warehouse at 412 Third Street, Benjamin P. Lane manager. A full stock of air compressors, hammer drills, concrete breakers and air lift equipment, also spare parts for these, will be carried at this warehouse.

The Southwark Foundry & Machine Co., Philadelphia, has discontinued its Cleveland office, the business in this territory hereafter to be conducted from 100 South Street, Akron, Ohio. F. H. Smith has charge of this office.

The New York office of the Louis Allis Co., motor manufacturer, has been moved from 345 Madison Avenue to 8 East Forty-first Street, Room 801.

Walter-Wallingford & Co., Cincinnati, with branch offices at Pittsburgh and Chicago, have been appointed exclusive sales agents for the Belfont brand of foundry, malleable, basic and bessemer pig iron manufactured by the Belfont Steel & Wire Co., Ironton, Ohio.

Rogers, Brown & Co., have been appointed sales agents for Ohio and West Virginia by the Domestic Coke Corporation, producer of by-product coke in the Fairmont, W. Va., district.

Charles H. Besly & Co., Chicago, formerly Chicago district representative for the Detroit Twist Drill Co., Detroit, has been appointed Chicago district representative of the Cleveland Twist Drill Co., Cleveland. The Machinists' Supply Co., Chicago, formerly Chicago representative of the Cleveland Twist Drill Co., has taken over the agency for the Detroit Twist Drill Co.

The Gibb Instrument Co., Bay City, Mich., has changed its name to Gibb Welding Machines Co. This change is in name only and denotes no change in organization. The company no longer makes instruments but is engaged exclusively in the manufacture of electric welding and heating machines.

The Milburn Sales Co., distributor in the Philadelphia territory for the Alexander Milburn Co., Baltimore, manufacturer of oxy-acetylene welding and cutting apparatus and portable carbide lights, has taken over the New York district with headquarters at 309-11 Fifth Avenue. E. P. Boyer and D. Keyser will be in charge.

Machinery Markets and News of the Works

MARKET FEATURELESS

Inquiry Continues Active, but Buying Is of Moderate Proportions

Railroads Working on Budgets—Lehigh Valley and Pennsylvania Issue Small Lists

INQUIRY continues active but is confined largely to small lots. From the standpoint of volume of orders placed the market during the week may be said to have been featureless. In view of the general business situation and a large amount of prospective buying, however, a tone of optimism prevails, definite improvement being expected with the turn of the year, after the inventory period.

Railroads are preparing budgets. The Santa Fé is working on a large program and the Chicago, Milwaukee & St. Paul has outlined a budget involving an expenditure of $250,000 to $300,000.

Purchases by the Nash Motors Co. and its subsidiary, the Ajax Motors Co., continue, and there is still considerable standard equipment to be bought.

Bids for a list of seven tools for the Lehigh Valley Railroad, 143 Liberty Street, New York, will be received until Dec. 5.

A list of eight tools for as many different shops has been issued by the Pennsylvania Railroad.

Interest is shown in the machinery requirements of the Central Tube Co., Economy, Pa., which is making a large addition to its plant, and also in the list for the Edgar Thomson Works of the Carnegie Steel Co., Braddock, Pa.

Price advances effective Jan. 1 are being considered by manufacturers in the Cincinnati district.

New York

NEW YORK, Dec. 2.

EVIDENCE continues to point to a more active market after the first of the year, to which the railroads will be prominent contributors. In the meantime it is felt that the machine-tool business will naturally follow in development the gradual increase of production rates in consuming industries. The volume of single tool inquiries continues satisfactory but demand for used tools is reported to be light in the face of a large volume of used equipment now available. Purchases have been largely of miscellaneous tools by a wide range of users.

A recent inquiry calling for a larger number of tools than is usual at this time comes from the Lehigh Valley Railroad, 143 Liberty Street, New York, bids to be in by Dec. 5. The list of seven machines includes a 42-in. vertical boring mill, four small lathes and a grinder. Recent purchases have brought industrial users more into prominence. The Standard Sanitary Mfg. Co., reported last week to have closed on 40 turret lathes for its new plant at Louisville, Ky., has purchased a total of 65 tools. The United Verde Copper Co. has closed on an 800-lb. steam hammer and Clayton Mark & Co., Chicago, on a 350-lb. steam hammer. The Weirton Steel Co. has purchased a 60-in. horizontal boring, drilling and milling machine.

Bids on a general contract have been taken by the Western Electric Co., 195 Broadway, New York, manufacturer of telephone instruments and equipment, for its eleven-story plant, 80 x 126 ft., at 744-54 Washington Street, estimated to cost $650,000, for which plans were drawn by McKenzie, Voorhees & Gmelin, 342 Madison Avenue, architects. The company is also taking bids until Dec. 6 for the construction of another group of buildings at its Kearny, N. J., plant, now in course of erection. Charles G. Du Bois is president.

The Nutractor Motor Co., Long Island City, manufacturer of automobile engines, has leased a factory recently completed on Hulst Street, near the Queens Boulevard, and will use as an assembling works and machine shop.

The British Empire Chamber of Commerce in the United States, 25 Broadway, New York, has received an inquiry (480) from a company at Sheffield, England, desirous of getting in touch with American manufacturers of machinery of latest design for the production of steel safety razor blades.

The Knickerbocker Ice Co., 41 East Forty-second Street, New York, will soon take bids for a three-story automobile service, repair and garage building, 60 x 116 ft., at 116 East Fifty-third Street, for company trucks and cars, to cost $70,000. C. L. Weir is company architect.

The Remington Typewriter Co., 374 Broadway, New York, is completing arrangements for the erection of a new branch plant at Toronto for its subsidiary, the Remington Typewriter Co., Ltd., 146 King Street, West, Toronto, estimated to cost $225,000. It will give employment to about 3000.

The International Paper Co., Pershing Square Building, New York, is said to be completing plans for additions in its newsprint mill at Three Rivers, Que., to include the installation of three paper-making machines and auxiliary equipment, estimated to cost $5,000,000. It is expected to complete the work by the fall of 1925.

The New York Edison Co., Irving Place and Fifteenth Street, New York, through a subsidiary interest, is planning for a new steam-operated electric generating station on a 16-acre tract at Tarrytown, N. Y., heretofore held by the Tarrytown Terminal Co. It will cost more than $7,500,000 with machinery.

The Department of Public Markets, room 2337 Municipal Building, New York, Edwin O'Malley, commissioner, is having plans drawn for a four-story ice and refrigerating plant, 85 x 165 ft., on Exterior Street, near 150th Street, to cost $325,000 with equipment.

The New South Wales Railway Commissioners, Melbourne, Australia, have preliminary plans for an electric power development to involve more than $20,000,000, consisting of the construction of two main generating plants, one in the Western portion of the State and the other in the eastern part, near Lithgow, with power substations, transmission lines, etc. The American Consulate, Melbourne, Elmer G. Pauly, assistant trade commissioner, has information regarding the project.

The Crane Market

INQUIRY for electric overhead cranes continues largely for single pieces of equipment, while interest in locomotive cranes is to a great extent confined to the railroads, which are in most cases only interested in estimates for next year. In view of the probable increase of production costs as a result of advances in the price of materials, locomotive crane builders are reported to be contemplating slightly higher prices before long. In the overhead field there is still keen competition for business. Among the possible railroad purchasers next year is the Boston & Maine, said to be contemplating buying two or three locomotive cranes from the 1925 appropriation. The Baltimore & Ohio, in the market last spring for six locomotive cranes, which were indefinitely postponed, may come into the market for part of the original list some time after Jan. 1. The outstanding overhead crane inquiry, in point of number of cranes required, is from the General Electric Co., Schenectady, N. Y. To the original inquiry for a 5-ton electric overhead and a small traveling jib crane for West Philadelphia has been added three 3-ton and six 5-ton overhead cranes of various spans for the same plant and a 10-ton, 37-ft. span, 5-ton, 20-ft. 6-in. span and a 3-ton, 20-ft. 6½-in. span, overhead electric cranes for Detroit. The Public Service Production Co., Newark, N. J., is about to close on a 15-ton crawl tread locomotive crane with 1½-cu. yd. bucket and is still in the market for two 20-ton hand power cranes not yet purchased for the Bath-Portland Cement Co.

In the Pittsburgh district, the Carnegie Steel Co., in the market for a number of cranes for its local works, recently inquired for four overhead cranes for the McDonald mills at Youngstown and the Youngstown Sheet & Tube Co. is expected to close on two cranes soon. The Gary Tube Co., Gary, Ind., is inquiring for a 25-ton and a 10-ton electric traveling crane and two 3-ton, slab charging machines.

Among recent purchases are:

Stone & Webster, Boston, a 20-ton locomotive crane for the Columbus Light, Heat & Power Co., Columbus, Ga., from the American Hoist & Derrick Co.

Franklin Coal Co., Chicago, a 20-ton locomotive crane from the Brown Hoisting Machinery Co.

Eppinger & Russell Creosoting Co., New York, a 15-ton locomotive crane for Jacksonville, Fla., from the American Hoist & Derrick Co.

E. & G. Brooke Iron Co., Birdsboro, Pa., a 22½-ton locomotive crane from the Industrial Works.

Mansfield Structural & Erecting Co., Mansfield, Ohio, a 20-ton used locomotive crane from an unnamed dealer.

Harris Structural Steel Co., 1480 Broadway, New York, a 15-ton, 80-ft. span, overhead traveling crane from a mid-western builder.

Pressed Steel Car Co., McKees Rocks, Pa., a 20-ton, 4-motor, 55-ft. 10-in. span overhead crane with 5-ton auxiliary from the Milwaukee Crane & Engineering Co.

M. J. Baum Monument & Stone Works, Springfield, Ohio, a 5-ton, 38-ft. span, double I-beam hand power crane from the Chisholm & Moore Mfg. Co.

Etna Foundry & Machine Co., Warren, Ohio, a 3-ton and a 10-ton electric traveling crane from the Northern Engineering Works.

Superior Steel Corporation, Carnegie, Pa., a 10-ton, 75-ft. span overhead crane from a mid-western builder.

Midland Structural Steel Co., Cicero, Ill., a 15-ton overhead electric crane from the Milwaukee Electric Crane & Mfg. Co.

The Brooklyn Edison Co., Inc., Pearl and Willoughby Streets, Brooklyn, is planning for the construction of a 40,000-hp. automatic power substation in the Flatbush district, estimated to cost $1,000,000 with distributing system.

The Mato Tile Works, Puentes Grandes Avenue, Havana, Cuba, plans to rebuild the portion of its factory destroyed by fire Nov. 22, with loss estimated at $65,000 including machinery.

The State Electricity Commission of Victoria, Melbourne, Australia, will take bids until Jan. 15 for voltage regulating apparatus for the Yallourn Power Scheme, as per specification 25/2, on file at the offices of the Bureau of Foreign and Domestic Commerce, Customs House, New York, and First National Bank Building, Chicago.

The Sleeper Radio Corporation, Astoria, L. I., manufacturer of complete radio sets, is disposing of a common stock issue to total $750,000, a portion of the proceeds to be used for expansion. Gordon C. Sleeper is president.

The School District of Beverly Township, Delanco, N. J., plans the installation of manual training equipment in its proposed high school estimated to cost $170,000, for which bids will soon be asked on a general contract. H. Ziegler, 17 Washington Street, Riverside, N. J., is architect.

Hardwick, Field & Loeb, Inc., Newark, N. J., has leased the building at 231 Murray Street, for the manufacture of electrical apparatus and radio equipment.

The Henry Blank Co., 19 Liberty Street, Newark, manufacturing jeweler, is said to have tentative plans for a new four-story factory at Liberty and Green Streets, for which it soon will select an architect.

Fire, Nov. 27, destroyed a portion of the three-story plant of the Artistic Metal Products Corporation, 134-142 Lafayette Street, Newark, manufacturer of metal electric lamp bases, etc., with loss estimated at $35,000 including equipment. It is planned to rebuild.

The Borough Council, Highlands, N. J., will receive bids until Dec. 8 for oil-operated pumping machinery for the municipal water plant. Specifications on file at the office of U. Grant Johnson, Borough Hall, Bay Avenue, borough clerk.

The Robert Gair Co., 350 Madison Avenue, New York, manufacturer of paper boxes, has awarded contract to the Austin Co. for a warehouse, 120 x 280 ft., to be built in connection with its main plant at Piermont, N. Y. Runways will be installed for 10-ton cranes. The Austin Co. is also building a new unit for the Bogota Paper & Board Co., Bogota, N. J., and an experimental laboratory for the Flintkote Co., East Rutherford, N. J., manufacturer of roofing material.

The Berger Machinery Sales & Appraisal Co., New Jersey, Railroad Avenue and Green Street, Newark, N. J., recently organized as dealer in new and used machine tools, is in the market for 10 geared presses for equipping its plant. S. H. Berger is one of the heads.

Chicago

CHICAGO, Dec. 1.

FOR those dealers who have not shared in the Ajax Motors Co. and Nash Motors Co. orders, November sales totals will show little or no gain above those of the previous month. Sentiment in the trade, however, is optimistic in view of the large amount of business in prospect. While it is probable that no railroad purchases will actually materialize until next year, most of the roads are busily preparing budgets, and inquiries will be issued in due course of time. In addition to the Chicago & North Western, the Illinois Central and the Burlington, the Santa Fé is working on a large program and the Chicago, Milwaukee & St. Paul has outlined a budget calling for the expenditure of from $250,000 to $300,000.

Purchases by the Nash Motors Co., and its subsidiary, the Ajax Motors Co., continue the leading feature of the market. A total of 29 automatic lathes has now been ordered, involving an expenditure of $100,000, and other recent purchases include $25,000 worth of gear cutters, as well as two turret lathes, two centerless grinders, and milling machines. Considerable standard equipment is still to be bought. The National Lock Co., Rockford, Ill., has placed orders for two vertical milling machines, two hand milling machines and nine spindles of sensitive drills. The Johnson Service Co., Milwaukee, has purchased 30 spindles of sensitive drilling machines. The Manistique & Lake Superior Railroad has closed for a used 27-in. engine lathe.

Haynes & Kinder, manufacturers of ornamental glass signs, 2250 West Chicago Avenue, Chicago, have purchased a site, 125 x 200 ft., at the corner of North Kildare Avenue and Drummond Place, upon which a factory is being built to cost $55,000.

The G. & W. Electric Specialty Co., 160 North LaSalle Street, Chicago, has awarded contract for a one-story plant, 72 x 282 ft., at 7778-84 Dante Street, to cost $75,000.

The Union Metal Products Co., Chicago, which shut down its plant at Hammond, Ind., formerly occupied by the Keith Railway Equipment Co., about a year ago, will remodel the works, commencing in January, at a cost of $500,000. The company manufactures freight car roofs and corrugated car ends.

Sears, Roebuck & Co., Chicago, have sold the factory on Fifty-second Avenue near Twenty-second Street, formerly known as the Fulton Saw Works to L. S. Sherwood, who will operate it under the name of the Sherwood Mfg. Co.

The Mount Vernon Car Mfg. Co., Mount Vernon, Ill., has awarded contracts for a foundry building to cost $400,000.

The Viking Pump Co., Cedar Falls, Iowa, has completed an office building and factory addition at a cost of $40,000.

The Improved Gravity Oil Burner Co., Riverside, Ill., recently incorporated with $3,000 capital stock, manufactures a new gravity oil burner, involving what is said to be a new principle. Premises have been leased at Riverside and plans call for the subsequent construction or purchase of a small plant. Officers are Richard Todd, president; Frank S. Egloff, vice-president; Richard Todd, treasurer; and I. Egloff, secretary.

The Cement Machinery Corporation, Waterloo, Iowa, is considering the construction of two additions estimated to cost $45,000.

The Oil-O-Matic Heating Co., 207 West Washington Street, Bloomington, Ill., manufacturer of oil-burning equipment, will erect a one-story plant, 80 x 290 ft., estimated to cost $45,000 with equipment. A. T. Simmons is company architect. C. W. Williams is general manager.

The National Envelope Co., Waukegan, Ill., has asked bids on general contract for a two-story and basement addition, 22 x 180 ft., to cost approximately $38,000.

The Prairie Oil & Gas Co., Independence, Kan., has secured permission to construct and operate a pipe line from the Craig oil fields in northern Colorado, north to the State line. It will be close to 100 miles long and will connect with a refinery at Parco, Wyo. The line will cost approximately $500,000, with pumping stations, etc. The Producers' & Refiners' Corporation, a subsidiary, has begun the construction of a new gasoline absorption plant at the Parco refinery, to cost $400,000, with equipment.

The Illinois Central Railroad Co., 135 East Eleventh Place, Chicago, has secured options on 70 acres near Waterloo, Iowa, and is said to be planning for the construction of extensions to its repair plant, to cost $600,000 with equipment.

The Board of Trustees, University of Chicago, 134 South La Salle Street, is planning for the construction of a central power house, estimated to cost $2,000,000 with equipment. The work will be carried out in connection with a 1925 construction program, involving $17,500,000 for new buildings.

The Hinson Mfg. Co., 922 Sycamore Street, Waterloo, Iowa, manufacturer of automobile accessories, has awarded contract to the H. A. Maine Co., Marsh-Place Building, for a one-story and basement addition, 60 x 100 ft. Clyde Hinson is president.

The Central Illinois Public Service Corporation, Ninth and Adams Streets, Springfield, Ill., will soon take bids for an ice-manufacturing plant at Canton, Ill., to cost $50,000 with equipment.

St. Louis

ST. LOUIS, Dec. 1.

PLANS are being arranged by the Hughes Tool Co., 300 Hughes Street, Houston, Tex., manufacturer of oil-well machinery, for a one-story works on West Twenty-third Street, Oklahoma City, Okla., estimated to cost $60,000.

The H. Ehrlich & Sons Mfg. Co., 20 South Seventeenth Street, St. Joseph, Mo., manufacturer of bank fixtures, etc., is considering the erection of a two-story addition, 78 x 150 ft., to cost approximately $75,000. Albert H. Ehrlich is one of the heads of the company.

The Board of Education, Vera, Okla., is considering the installation of manual training equipment in its proposed high school, estimated to cost $125,000, for which plans will be drawn by the Stewart Construction Co., First National Bank Building, Oklahoma City, Okla., architect.

The plant and property of the Bismarck Electric Light & Power Co., Bismarck, Mo., has been acquired by new interests, headed by T. F. Bowdern and F. W. Graham. Plans are under way for extensions and the installation of additional equipment.

The Chicago, Rock Island & Gulf Railroad Co., El Reno, Okla., has plans for the erection of additions to its car repair shops at Shawnee, Okla., to replace structures recently destroyed by fire. The expansion will cost about $225,000, including equipment. It will also build a new power plant, for which a contract will be awarded later. A. B. Warner is vice-president.

The Southwick Auto Supply Co., 925-29 Kansas Avenue, Topeka, Kan., has awarded a general contract to D. P. Scott, 1009 Arch Street, for a two-story and basement service and mechanical shop, 25 x 130 ft., to cost $22,000. H. H. Southwick is head.

The Common Council, Clinton, Okla., has plans for extensions in its waterworks, with the installation of pumping machinery and other equipment, estimated to cost $80,000. B. M. Hart, Oklahoma City, Okla., is consulting engineer.

The City Council, St. Joseph, Mo., has called a special election on Dec. 16 to approve a bond issue of $300,000, the proceeds to be used for a municipal electric light and power plant.

The Beth Chemical Corporation, care of T. H. Loy, secretary, Chamber of Commerce, Aurora, Mo., plans the construction of a power house and machine shop at its proposed local plant on 360 acres, recently acquired, estimated to cost $350,000 with machinery.

The Arkansas Utilities Co., 612 Planters Building, St. Louis, has acquired the plant and property of the Peoples' Electric Co., Marianna, Ark., and plans extensions with additional equipment in this section. Bonds for $150,000 will be issued.

New England

BOSTON, Dec. 1.

DECEMBER begins with little promise of improvement in the local machine tool trade. Purchases of needed equipment are being postponed until after the inventory period, as is attested by reported sales for the past week. Where new tools are concerned, bench equipment is largely involved, or the smallest of lathes. Most of the business has gone to the used equipment dealers. For the 10 lathes required by Boston for a school, Joseph Beal & Co., 471 Atlantic Avenue, Boston, is low bidder at $9,650 for the lot. Inquiries for individual tools are increasing, mostly as the result of missionary work by machinery dealers earlier in the year, consequently details are withheld.

Construction of a manufacturing plant is under way for the Vulcan Iron Works, 63 John Street, New Britain, Conn. Max J. Unkelbarch, 162 Main Street, is the architect.

The New York, New Haven & Hartford Railroad, New Haven, Conn., has awarded contract for a one-story, 90 x 95 ft., engine repair house at Fitchburg, Mass. Plans are by the company's engineers.

The Hyde Mfg. Co., 10 Eastford Road, Southbridge, Mass., machine knives, has awarded contract for a one-story, 64 x 86 ft., addition. Plans are private.

Plans have been completed for a three-story and basement, 40 x 168 ft., and two story, 80 x 110 ft., elementary school addition in West Roxbury, for Boston, to cost without equipment $400,000. C. Howard Walker & Sons, 120 Boylston Street, Boston, are the architects. Thomas P. Glynn is chairman of the school commission.

Ground has been broken for a two-story, 35 x 105 ft., addition for the Worcester Stamped Metal Co., 9 Hunt Street, Worcester, Mass. The E. J. Cross Co. has the general contract.

The Acme Shear Co., Joseph Street, Bridgeport, Conn., has awarded a general contract to the Hewlett Co., Bridgeport, for a two-story addition, 46 x 47 ft.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Dec. 9, for one motor-driven grinding machine, and one set of spare parts for the Fore River Navy Yard; also, for a similar machine and spare parts for the Camden, N. J., yard, schedule 2976, and until Dec. 16, for 10,000 lb. tool steel for the Newport, R. I., yard, schedule 2996.

The City Council, Gloucester, Mass., will construct a municipal sewage pumping plant, estimated to cost $50,000 with equipment.

Fire, Nov. 25, destroyed a building at the plant of the Lincoln Iron Works, Rutland, Vt., manufacturer of stone-cutting and working machinery, with loss reported at $90,000.

Bird & Son, Inc., East Walpole, Mass., manufacturer of roofing products, etc., is having plans drawn for an addition to its branch works at Norwood, Mass., comprising finishing

building, oven plant, boiler house, distributing works and other structures, to cost about $425,000 with equipment. Monks & Johnson, 99 Chauncy Street, Boston, are architects and engineers.

Fire, Nov. 22, destroyed a portion of the plant and machinery of the Burton K. Harris Lime Co., Limerock, R. I., with loss estimated at $50,000. It is planned to rebuild.

Work is in progress on a one-story plant on Dixwell Avenue, New Haven, Conn., for the New Haven Welding Co., 763 State Street, to be 50 x 100 ft. A general contract recently was let to Pratt & Madison, 32 Bradley Avenue.

The Frank H. Davis Co., 175 Richdale Avenue, Cambridge, Mass., is inquiring for a screw cutting engine lathe.

Cincinnati

CINCINNATI, Dec. 1.

ORDERS for machine tools continue in fair volume, though the aggregate was not as large as the previous week. The Thanksgiving holiday apparently had something to do with the slowing down of the market, as buyers generally were not taking an active interest in closing some pending business. Inquiry continues active and, while it may be the first of the year before orders are placed, the trade is looking for a great improvement after inventory is completed. Railroad buying is in fair volume, most of the purchases being for the heavier type of tools for repair shops. Automotive companies and implement manufacturers are doing some buying, and this business is expected to increase as production of automobiles is resumed. General industrial buying is confined largely to actual needs to round out equipment. There is, however, an air of optimism evident.

With costs of materials entering into the manufacture of tools constantly increasing, it would not be surprising to see selling prices move upward. At least this is the opinion of leaders in the industry and some manufacturers are now considering advancing prices, effective Jan. 1.

The Ford Motor Co., Detroit, is contemplating increasing the power equipment at its Hamilton, Ohio, works. This plant is now using hydroelectric power, but with low condition of the Miami River sufficient power is not being developed to meet the needs.

The U. S. Engineers' Office, Louisville, Ky., will receive proposals until Jan. 12, for constructing Lock No. 51, Ohio River, at Golconda, Ill. Machinery for operating the gates will be required. Information furnished on application.

The Milton Iron Co., Wellston, Ohio, has increased its capitalization from $200,000 to $600,000. The company operates the Milton furnace, producing silvery pig iron. The works will be greatly improved and tentative plans have been prepared for the erection of a gray iron foundry. H. S. Willard, Jr., is president.

R. C. Burton, President, Harmon-Burton Coal Co., Zanesville, Ohio, is in the market for transmission, conveying, hoisting and other equipment in connection with the development of recently acquired coal mining properties in Salt Creek Township, Muskingum County.

The National Cash Register Co., Main and K Streets, Dayton, Ohio, will call for bids in the spring for its proposed six-story and basement addition, two stories, 120 x 540 ft., and four stories, 80 x 540 ft., to cost approximately $2,500,000 with machinery. George B. Clow is company engineer and will be in charge of construction.

The Home Ice Co., Eleventh and Douglas Streets, Chattanooga, Tenn., has plans for a one-story ice-manufacturing plant to cost $115,000, with machinery. Equipment purchases are being arranged. William Cotter is president.

The Board of Education, South Charleston, Ohio, is considering the installation of manual training equipment in its proposed high school estimated to cost $175,000, for which plans will be drawn by Walker & Norwich, Dayton, Ohio, architects.

J. W. Coulson & Co., 95 West Spring Street, Columbus, Ohio, manufacturers of patented store fronts, etc., are having plans drawn for a four-story factory, 35 x 150 ft., with L extension, 50 x 68 ft., to cost $45,000. J. H. Weiser is general manager.

The Tuscora Clay Products Co., Mineral City, Ohio, Frederick Sattler, president, has preliminary plans under advisement for new works for the manufacture of brick and kindred products, with power house and machine shop, to cost $100,000 including machinery.

The General Body Co., Defiance, Ohio, has taken over a portion of the former local plant of the Defiance Motor Truck Co., for the manufacture of automobile bodies and plans to expand operations for employment of about 200 men. Additional equipment will be provided.

The Citizens' Auto Parts Co., 12 Hamilton Avenue, Dayton, Ohio, will soon take bids on a general contract for a two-story and part basement plant at Hamilton Avenue and Thirty-fifth Street, 32 x 70 ft., to cost $20,000. C. A. Hook, Realty Building, is architect. J. J. Jacobs is president.

The Southern Railway Co., Washington, is said to be considering plans for rebuilding its repair shops at Chattanooga, Tenn., to cost $500,000 with equipment. H. W. Miller is vice-president.

Buffalo

BUFFALO, Dec. 1.

PLANS are being completed by the Buffalo Sash & Door Corporation, 120 Church Street, Buffalo, for a one-story addition, 200 x 200 ft., to cost $25,000. Plumer & Mann, 700 Main Street, are architects.

The Northern New York Utilities, Inc., Watertown, N. Y., operating electric light and power plants, has arranged for a new bond issue of $1,750,000, a portion of the proceeds to be used for extensions and improvements, including work on additional generating plants now in course of construction.

The Lawler Iron Works, 44 Gull Street, Buffalo, is planning the installation of additional equipment at its foundry.

The Board of Education, Marathon, N. Y., is considering the installation of manual training equipment at its proposed two-story high and grade school, estimated to cost $130,000, for which bids will be asked on a general contract early in December. C. W. Clark, Savings Bank Building, Cortland, N. Y., is architect.

The City Council, Medina, N. Y., plans the installation of electric dynamos and other power equipment at the city pumping station to replace machinery recently destroyed by fire.

The Syracuse Lighting Co., Syracuse, N. Y., has acquired the Seneca River Power Co., Baldwinsville, N. Y., and plans for extensions in power plants and system in northern Onondaga and southern Oswego Counties. A price of $750,000 is said to have been given for the property. The purchasing company, a subsidiary of the United Gas Improvement Co., Philadelphia, has recently arranged for a preferred stock issue of $1,350,000, and common stock issue of $500,000, a portion of the proceeds to be used for expansion.

Work is nearing completion on a $100,000 addition to the plant of the Dahlstrom Metallic Door Co., East Second and Buffalo Streets, Jamestown, N. Y., for which considerable equipment will be required after Jan. 1. The company specializes in the manufacture of metal window frames for closed car manufacturers.

Ward & Dickinson, Silver Creek, N. Y., manufacturers of dining lunch cars, are in the market for lathes, sanders, and other wood-working equipment for a local factory nearing completion.

The Continental Heater Co., Dunkirk, N. Y., contemplates an addition to its plant.

Indiana

INDIANAPOLIS, Dec. 1.

THE Showers Brothers Co., Bloomington, Ind., manufacturer of furniture, kitchen cabinets, etc., has awarded a general contract to the H. K. Ferguson Co., Cleveland, for two two-story additions, 85 x 190 ft. and 60 x 190 ft., respectively, to cost $150,000.

The Indiana Board & Filler Co., Vincennes, Ind., operating paper mills, strawboard plants, etc., is disposing of a bond issue of $350,000, a portion of the proceeds to be used for expansion.

The Central Lumber & Mill Co., 247 Calumet Street, Hammond, Ind., is having plans drawn for a one-story addition, 60 x 136 ft., to cost approximately $65,000. W. H. Paxton is president.

The Ohio Valley Roofing Co., Evansville, Ind., is considering plans for a new works addition to cost $50,000 with equipment.

Manual training equipment will be installed in the new two-story and basement school to be erected at South Bend, Ind., estimated to cost $300,000, for which bids will soon be asked on a general contract. Freyermuth & Maurer, Farmers' Trust Building, are architects.

The Berryhill Malleable Iron Co., Evansville, Ind., recently organized with a capital of $150,000, and 7500 shares of stock, no par value, is selecting a site for a new plant.

with initial unit estimated to cost $200,000 with machinery. The new company is headed by John H. Berryhill, formerly connected with the Vulcan Plow Co.; Edward Kiechle, Southern Stove Works; George Reichmann, Evansville Furniture Co., and John W. Boehne, Jr., Indiana Stove Works, all of Evansville.

The Holt & Brandon Ice Co., Evansville, Ind., is considering plans for extensions and the installation of additional equipment estimated to cost $100,000.

Philadelphia

PHILADELPHIA, Dec. 1.

BIDS are being asked on a general contract by the Simplex Valve & Meter Co., Fidelity Building, Philadelphia, for its one-story plant, 90 x 175 ft. E. A. Wightman, Bankers' Trust Building, is architect.

S. S. Fretz, Jr., & Co., Twenty-third and Sedgley Streets, Philadelphia, manufacturer of iron, steel and brass steamfitters' equipment, has acquired about 7 acres near Boyertown, Pa., where a branch plant is now being operated, for the erection of a new mill.

J. E. Fieldstein, Otis Building, Philadelphia, architect, has plans for a three-story automobile service, repair and garage building, 60 x 160 ft., to cost $80,000; also for a similar one-story building, 90 x 135 ft., to cost approximately $40,000.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has an inquiry (42914) from Chavanne-Brun Freres, St. Chamond, France, stating that they are in the market for American machinery for sheet-metal working, especially aluminum strips from 3 to 25/10 mm. in thickness, as well as metal boxes, tubes, etc. The machinery is required to complete present rolling mill equipment at the works, to be of automatic or preferably semi-automatic type, with prices f.o.b. New York; also an inquiry (42923), from the American Suit Case Mfg. Co., P. O. Box 62, San Juan, Porto Rico, in the market for machinery for the manufacture of metal frames for suit cases.

The Atwater Kent Mfg. Co., 4937 Stenton Avenue, Philadelphia, manufacturer of radio sets and equipment, has awarded a general contract to Irwin & Leighton, 126 North Twelfth Street, for its plant addition at Wissahickon and Abbottsford Avenues, to cost $300,000 with machinery. The Ballinger Co., 105 South Twelfth Street, is architect.

The Atlantic City Electric Co., Atlantic City, N. J., is disposing of a bond issue of $750,000, a portion of the proceeds to be used for extensions and betterments.

The Start Garage Co., Bradford, Pa., is having plans drawn for a two-story service, repair and garage building to cost $100,000 with equipment. Lawrie, Green & Co., 116 Locust Street, Harrisburg, Pa., are architects.

The Borough Council, Weatherly, Pa., is planning for extensions and improvements in the municipal electric power plant, and purposes to arrange a bond issue for equipment purchases and other work.

The Waynesboro Nipple Works, Waynesboro, Pa., will build a one-story addition, 75 x 85 ft.

The Pennsylvania Power & Light Co., Allentown, Pa., has work in progress on a new power dam for a hydroelectric development at Wilsonville, near Hawley, Pa., and will proceed with the construction of the generating station in the near future. The entire project will require about 36 months for completion, and will involve close to $7,500,000. A transmission system will be built in this district.

Manual training equipment will be installed in the proposed three-story high school to be erected at Elkins, Pa., estimated to cost $500,000, for which bids will soon be asked on a general contract. Paul A. Davis, 3d, and Dunlap, 1713 Sansom Street, Philadelphia, are architects.

The Parish Mfg. Co., Chestnut Street, Reading, Pa., manufacturer of automobile axles, frames, etc., has acquired about 10 acres near the northern city limits, and contemplates the early erection of a new plant to increase its present output about 50 per cent. The company is occupying the former shops of the Philadelphia & Reading Railway Co.

Battey & Kip, Inc., engineer, 123 Madison Street, Chicago, has been awarded contract by the Pennsylvania Railroad for a new engine house and shops at Toledo, Ohio, to cost $500,000. The same company also prepared the plans.

The Heintz Mfg. Co., Front and Olney Streets, Philadelphia, manufacturer of pressed steel automobile bodies, has filed plans for a one-story addition, for which a contract recently was let to the William F. Newberry Co., Otis Building.

Cleveland

CLEVELAND, Dec. 1.

MACHINERY sales in this territory increased slightly in November over October. During the past week dealers booked a fair volume of orders for small lots or single machines. Inquiries are fair but confined to small lots. The Woods Engineering Co., Alliance, Ohio, purchased five thread milling machines, all used tools. The American Steel & Wire Co. purchased a 24-in. planing machine. A Cleveland manufacturer took an order for a large multiple punching machine from the Union Metal Products Co., Chicago, which also placed four or five punching and shearing machines with other makers.

The National Tube Co. placed an ore-handling bridge to be equipped with a 12-ton bucket with the Brown Hoisting Machinery Co. It will be erected in Lorain, Ohio, to replace one destroyed by the tornado last summer.

The Wine Railroad Appliance Co., Toledo, Ohio, has placed contract for a two-story and basement factory, 97 x 365 ft. W. E. Wine is president. The Mills-Rhines Bellman & Nordhoff Co., 1234 Ohio Building, Toledo, Ohio, is the architect.

The Toledo Steel Casting Co., Toledo, Ohio, has placed contract for a one-story factory addition, 62 x 104 ft. J. B. Nordholt is president and C. C. Smith is secretary.

The Klein Auto Body Co., West Twenty-fifth Street, Cleveland, has placed contract for a one-story factory, 30 x 140 ft. Bernard Klein is President.

The General Tire & Rubber Co., Akron, Ohio, has under construction a four-story 100 x 132 ft. addition to its mill room and a one-story 60 x 140 ft. addition to its calender room.

Tom Knight, 250 The Arcade, Cleveland, is taking bids for a $50,000 factory to be erected at 1525 Fairfield Avenue. It will be a one-story with 20,000 sq. ft. of floor space.

The Bessler Moveable Stairway Co., 1900 East Market Street, Akron, Ohio, contemplates the erection of a five-story factory, 100 x 120 ft. F. E. Bessler is president.

Manual training shops will be provided in the new Cleveland junior high school, Youngstown, Ohio, plans for which are being prepared. Bids will probably be taken in January.

The Goodyear Tire & Rubber Co., Akron, Ohio, has awarded contract to the Hunkin-Conkey Construction Co., Cleveland, for an addition to its machine shop. It will be five stories, 160 x 530 ft.

The village of Millersburg, Ohio, contemplates the erection of an electric light and power plant. Barston & McCurdy, 321 Ohio Building, Akron, Ohio, are the engineers.

The plant and equipment of the Koehuline Ice Mfg. Co., Bridgeport, Ohio, were destroyed by fire Nov. 25, with loss of $75,000. Plans for rebuilding are under way. Equipment to be purchased will include air compressors, extractors, transmission and conveying equipment.

Plans have been filed by the Cleveland Railway Co., Hanna Building, Cleveland, for the erection of a brick and steel sub-station at 1004 Central Avenue, to cost $50,000.

Detroit

DETROIT, Dec. 1.

CONTRACT has been awarded by the Blackmer Rotary Pump Co., Petoskey, Mich., to the Owen-Ames-Kimball Co., Grand Rapids, Mich., for a one-story branch plant at Grand Rapids, 100 x 345 ft., to cost approximately $100,000 with equipment. It will be ready for service in February.

The Marcellus Corporation, Marcellus, Mich., organized to succeed to the business of the Chapman Engine Works, has taken over the local plant and will soon begin operations for the manufacture of engine equipment and parts.

The People's Coach Co., Highland Park, Detroit, manufacturer of motor buses, has awarded a general contract to the Austin Co. for a new one-story plant, 129 x 160 ft., at Flint, Mich., to cost $100,000 with equipment.

The National Smelting & Refining Co., 1842 Illinois Avenue, Detroit, has purchased property at Ecorse, Mich., and plans the erection of a new mill to cost close to $100,000 with machinery. Harry Greonin is secretary.

The Murray Body Corporation, Detroit, has been formed under State laws with a capital of $12,300,000 to take over and consolidate the R. C. Wilson Body Co., J. C. Widman Co., and the Towson Body Corporation, all operating local

plants for the manufacture of closed automobile bodies. The new company will be affiliated with the J. W. Murray Mfg. Co., Detroit, manufacturer of automobile sheet steel products, of which J. W. and J. R. Murray are heads. The corporation will operate four individual plants, and has plans for expansion. Allen Shelden will be president and Gordon Fairgreaves, heretofore manager of the Towson Body Co., general manager. A bond issue of $4,000,000 is being arranged.

The Lewis Mfg. Co., Bay City, Mich., manufacturer of ready-cut and portable houses, has plans under way for rebuilding of the portion of its woodworking plant and planing mill recently destroyed by fire with loss of $100,000 including machinery.

The J. W. Cook Corporation, Genesee Bank Building, Flint, Mich., architect, has plans for a two-story automobile service, repair and garage building, 130 x 145 ft., estimated to cost $100,000 with equipment.

The Sears Paper Co., 305 Hayden Avenue, Saginaw, Mich., will rebuild the portion of its mill recently destroyed by fire. It will be two stories, estimated to cost $50,000. H. J. Sears is head.

The Joseph-Randall Co., Traverse City, Mich., manufacturer of furniture, is planning the erection of an addition to double, approximately, its present output of 250 pieces per day.

The Jewett Radio & Phonograph Co., 5630 Twelfth Street, Detroit, is taking bids on a general contract for a two-story branch plant on Orchard Lake Avenue, Pontiac, Mich., 50 x 200 ft., to cost about $75,000 with equipment. Fisher Brothers, 24 West Huron Street, Pontiac, are architects. E. H. Jewett is president.

The Hughes Steel & Equipment Co., now at Allegan, Mich., will move to Holland, Mich., where it will occupy the former Gunser Willow Co. factory. The Hughes company manufactures steel factory furniture.

A general contract has been awarded by the Watts Laundry Machinery Co., Inc., St. Joseph, Mich., for a one and two-story plant at Benton Harbor to cost $40,000, exclusive of equipment, which will include presses, lathes, drills and transmission equipment.

The Standard Fuel Engineering Co., Detroit, which plans to install a foundry department, is in the market for a 500-lb. iron and steel electric melting furnace, preferably a good second-hand unit. Other foundry equipment probably will be required also. T. Q. Cleland is engineer in charge.

Milwaukee

MILWAUKEE, Dec. 1.

MACHINE-TOOL traders look for a comparatively healthy volume of orders in December, with the general situation clarified and a greater degree of stabilization apparent everywhere. Business in November was fair, especially in comparison with preceding months. This has inspired hopes, fortified by increasing inquiry, of active demand this month, with prospects even brighter after the turn of the year.

The Kahlenberg Brothers Mfg. Co., Two Rivers, Wis., manufacturer of marine engines, contemplates the erection of an addition to its foundry and machine shop early in 1925. Details will not be available until an architect is selected. William R. Kahlenberg is president.

The Northern Realization Co., Milwaukee, organized by local interests which recently acquired from the trustee the entire property of the defunct A. H. Petersen Mfg. Co., at 1614 Fratney Street, manufacturer of electric drills, has let contracts for the rehabilitation of the main machine shop, badly damaged by fire prior to the bankruptcy action. The new owners plan to resume the production of drills and other appliances and will require considerable new equipment both for replacement and new departments.

The Beloit, Wis., Board of Industrial Education has selected plans by Merman & Skogstad, architects, La Crosse, Wis., for the proposed new Central Vocational Institute, estimated to cost $175,000. The building will be 106 x 188 ft., two stories and basement, and construction bids will be asked about Jan. 1. Equipment for the shops will be purchased early next spring. A. G. McCreary is chairman of the board.

J. J. Leinfelder & Son Co., La Crosse, Wis., manufacturer of galvanized and sheet steel products, building materials, etc., has plans for a manufacturing and warehousing addition to cost about $35,000 with equipment. Foundations will be laid immediately.

The Sundby Mfg. Co. of Milwaukee has been incorporated with a capital stock of $10,000 to manufacture a general line of radio and automotive parts and materials, including storage batteries. Quarters will be leased for the present. The principals are J. C. Sundby, 1415 Tenth Street; George D. Luscher, and William Doll.

The Monroe Auto Co., Monroe, Wis., has awarded contracts for the erection of a new sales and service building, 50 x 90 ft., two stories and part basement, on the Public Square at West Washington Street. New equipment will be required throughout. Everett Keel is chief owner of the business.

The Continental Axle Co., Edgerton, Wis., affiliated with the Highway Trailer Co., same city, is erecting a steel foundry as an addition to its automobile, truck, tractor and trailer axle and spring works. The portions of the plant badly damaged by fire some time ago also are being repaired and inquiry is being made for some new machinery. J. W. Menhall is general manager.

The Boehck Machine Co., Inc., Milwaukee, jobber of and dealer in new and used machine tools, mill and factory machinery, and conducting a general repair and service business, is erecting a new headquarters building costing about $30,000 at 2404-2408 Clybourn Street, to be ready about Jan. 1. The work is in charge of Frank Howend, architect and engineer, 69 Wisconsin Street, local.

The Quality Aluminum Co., Waukesha, Wis., manufacturer of aluminum castings, has started construction work on a $75,000 factory extension, 98 x 150 ft., one story, of brick and concrete. While some of the equipment has been placed, the bulk of the requirement remains to be purchased. A. Pankrats is president and general manager.

San Diego Has Erected a 1,202,000-Gal. Steel Water Tower to Obtain Sufficient Water Pressure in an Elevated Section of the City. The tank is said to be one of the largest elevated tanks ever built. It has a diameter of 54 ft., with a cylinder height of 52 ft. 3 in., while the hemispherical bottom has a height of 27 ft. below the balcony. The bottom of the hemisphere is 50 ft. above the ground, while the total height from top of foundation to top of overflow is 127 ft. 5½ in. About 400 tons of plates and shapes were used in building the tank and tower, involving the driving of about 40,000 rivets, of which 13,900 went into the hemispherical bottom. The work was done by the Pittsburgh-Des Moines Steel Co.

Pittsburgh

PITTSBURGH, Dec. 1.

MACHINE-TOOL business in this district is fairly satisfactory, although the sales run almost entirely to single tools with action still deferred against the lists which have been before the trade for several weeks. Interest is high in the tool requirements of the Central Tube Co., Economy, Pa., which is building a large addition to its plant and in the list put out a few weeks ago for the Edgar Thomson Works, Carnegie Steel Co., Braddock, Pa. The Pennsylvania Railroad is inquiring for about eight tools, for as many different shops. With most of the local trade, the month of November was fairly good in point of sales. The expectation is that December will be somewhat quieter on account of the inventory season, but it is generally believed that following that period business will again improve.

The Wellman, Seaver, Morgan Co., will furnish a car dumper for the Carnegie Steel Co. for one of its Pittsburgh district plants, and the Pennsylvania Railroad which is installing a car dumper at Sandusky, Ohio, has placed the order with Heyl & Patterson, Inc., Pittsburgh.

The Allis-Chalmers Mfg. Co., will furnish the Westmoreland Lime Stone Co., Hermanie, Pa., with equipment for a crushing plant, including crushing machinery, elevators, screens and motor drives, and also has taken the contract for a complete pulverizing unit for the Ohio Marble Co., Piqua, Ohio, including screens, elevators and motors.

John B. Moore, Latrobe, Pa., is in the market for a number of machine tools, including chucks, lathes, drills and other motor-driven equipment.

The Pennsylvania Lubricating Co., Thirty-fourth Street and the Allegheny Valley Railroad, Pittsburgh, has plans for a new oil storage and distributing works to cost about $55,000.

The Keystone Bronze Co., Thirty-ninth Street and the Allegheny Valley Railroad, Pittsburgh, will rebuild the portion of its plant recently destroyed by fire, estimated to cost $18,000.

The Trabold Motors Co., 429 Swank Building, Pittsburgh, is considering plans for a one-story assembling and parts building, 35 x 200 ft., estimated to cost $35,000. Adam G. Trabold is head.

The A. C. Love Co., Huntington, W. Va., has inquiries out for a screw cutting engine lathe, about 60-in. swing, 14 ft. between centers.

The Pennsylvania Lines West, Pittsburgh, have awarded general contract to the Pittsburgh Construction Co., Diamond Building, for a coal-loading plant at Sandusky, Ohio, to cost approximately $750,000 with equipment.

The H. C. Frick Coke Co,, Carnegie Building, Pittsburgh, has authorized plans for the complete electrification of its mines and properties at Connellsville, Pa., to cost $2,000,000 with equipment.

The Penn Public Service Co., Johnstown, Pa., has acquired the plant and property of the Solar Electric Co., Brookville, Pa., for $150,000 and plans extensions and installation of additional equipment.

The United States Engineer, Huntington, W. Va., will receive bids until Dec. 6, for two 3-drum hoisting engines with boilers, circular 57.

Gulf States

BIRMINGHAM, Dec. 1.

THE Phoenix Portland Cement Co., Jefferson County Bank Building, Birmingham, has closed negotiations for the purchase of 15 acres on the new industrial canal at New Orleans as a site for a cement mill and lime plant estimated to cost $1,750,000 with machinery. A power house will be built. Lindley C. Morton is president and E. P. Haubert secretary and purchasing agent.

The Henry-Hays Lumber Co., Inc., Mobile, Ala., will proceed with the construction of a new saw and lumber mill on property recently secured at St. Marks, Fla., with power house and machine shop. H. H. Henry is one of the heads of the company in charge.

The Mission Ice Co., 226 Rivas Street, San Antonio, Tex., will build a one-story ice-manufacturing plant at Woodlawn Avenue and the Fredericksburg Road, 37 x 130 ft., to cost $65,000. The Harrington Co., 607 Houston Building, is architect.

The Board of School Trustees, Plainview, Tex., plans the installation of manual training equipment in a proposed high school, for which bonds for $120,000 have been approved. J. F. Sanders is secretary.

Gulledge Brothers, Verbena, Ala., have inquiries out for water wheels, electric generator and accessory equipment for a proposed hydroelectric power station on neighboring site.

The Winnfield Concrete Pipe Co., Winnfield, La., has leased property at Natchitoches, La., and contemplates the erection of a new plant. J. A. McConnell is head.

The West Coast Mfg. Co., Gainesville, Fla., has purchased property at Jacksonville, Fla., and is said to have plans for a new lumber and planning mill, with steam power house, estimated to cost $100,000 including machinery.

The Planters' & Manufacturers' Cotton Co., New Braunfels, Tex., will build a power house and machine shop in connection with its proposed mill on the San Antonio-Austin Highway, San Marcos, Tex., to cost approximately $1,000,000. A general contract has been let to Lockwood, Greene & Co., 27 Federal Street, Boston, engineer.

Fire, Nov. 24, destroyed the plant of the Black River Lumber Co., Willets, near Natchez, Miss., with loss reported at $175,000 including machinery. Rebuilding plans will be considered in the near future. The loss comprised saw mill, box factory and other structures.

The Common Council, Paducah, Tex., plans the installation of pumping machinery and auxiliary equipment at its proposed waterworks, for which a bond issue of $125,000 has been approved.

The West Texas Utilities Co., Abilene, Tex., is arranging for a one-story ice-manufacturing plant, 75 x 80 ft. William Nichols and George F. Campbell, Abilene, are associated architects.

The City Commission, Greenville, Tex., plans the installation of pumping machinery and power equipment in connection with proposed extensions in the municipal waterworks, estimated to cost $700,000. The Elrod Engineering Co., Dallas, Tex., is engineer.

The Southern Power & Light Co., Sterlington, La., has acquired the recently organized Louisiana Power Co. and the Louisiana Power & Light Co. and will consolidate the interests. The first noted purchased company has construction in progress on a new power plant estimated to cost $3,000,000, with transmission system, etc.

B. K. Brown and William Barry, Milton, Fla., and associates are said to have closed negotiations for the purchase of a site at Little River, Fla., for a proposed ice-manufacturing plant, for which plans will soon be drawn.

South Atlantic States

BALTIMORE, Dec. 1.

BIDS will be received by the United States Engineer, Old Land Office Building, Washington, until Dec. 10 for one 20-ton platform scale, circular 245; until Dec. 22 for one complete socket wrench set of 51 or more wrenches; and, at a date yet to be decided, for pumping equipment and motors for the District of Columbia water supply project.

The Everett Motor Co., Brunswick, Ga., manufacturer of automobile engines, plans to rebuild the portion of its plant destroyed by fire Nov. 22 with loss estimated at $35,000 including equipment.

The Reynolds Brothers Lumber Co., Albany, Ga., is said to be completing plans for a new mill on the Ogeechee River, Chatham County, Ga., to cost approximately $200,000 with equipment.

J. C. Steele & Sons, Statesville, N. C., manufacturers of clay-working machinery, have inquiries out for a locomotive crane, 8 to 10 tons capacity, with 12-ft. radius, gasoline driven, mounted on railroad car wheels; also for one single, traveling head shaper, 24 to 30-in. stroke.

The School Board, Hyattsville, Md., is said to be planning the installation of manual training equipment in the proposed addition to the high school, estimated to cost $125,000, for which an appropriation has been authorized by the State Legislature.

The Pocahontas Fuel Co., Pocahontas, Va., will build additional coal tipples at its properties at Faraday, near Beech Fork, W. Va., with installation of hoisting equipment and other coal mining machinery.

W. H. Bolton, Griffin, Ga., is in the market for saw mill machinery, including a wood-splitter, saw engine and auxiliary apparatus.

Lorick & Lowrance, Inc., Columbia, S. C., is desirous of getting in touch with manufacturers of air pressure water tanks from 300 to 1000 gal. capacity.

Ovens, power equipment, conveying and other machinery will be installed in the two-story plant to be erected by the Geilfuss Bakery, Liberty Street, Spartanburg, S. C., estimated to cost $110,000, for which a general contract has been let to Bryson & Webber, Allen & Law Building. The construction will be supervised by Lockwood, Greene & Co., Spartanburg, architect and engineer.

The Common Council, Shenandoah, Va., is completing plans for rebuilding the municipal electric power plant recently destroyed by fire, estimated to cost $50,000 with equipment.

The Board of Education, Wilmington, Del., has authorized the purchase of condensers for power service and auxiliary equipment at the high school. Specifications will be available soon at the office of Floyd E. Booth, business manager.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for a locomotive crane, about 50-ft boom, with 1 to 1½-yd. capacity clam shell bucket, for quarry service; also for a number of dump cars, each about 4 yd. capacity, 36-in. gage, and for several triplex pumps and accessories, 8 x 10-in., 10 x 12-in., and 12 x 12-in.

The Makepeace Box & Lumber Co., Sanford, N. C., has tentative plans for the erection of a new factory to manufacture sash, doors and kindred products, to cost $45,000. I. F. Makepeace is president.

The Pigeon River Power Co., a subsidiary of the Asheville Power & Light Co., Asheville, N. C., is completing plans for its proposed hydroelectric generating plant on the Pigeon River, about 40 miles from Asheville, with capacity of about 60,000 hp. The North Carolina Electrical Co., a subsidiary of the same parent interest, will build an addition to its steam-operated electric power plant.

The Taylor-Parker Co., P. O. Box 1183, Norfolk, Va., is in the market for a return tubular boiler, about 100 hp. capacity, and 125 lb. working pressure.

The United States Engineer, Savannah, Ga., will take bids until Dec. 19 for one spiral 5-blade, cast steel cutter, circular 131.

The Edisto Public Service Co., Denmark, S. C., will remodel its ice-manufacturing plant and install electric equipment to replace present steam apparatus. It also plans the construction of an electric-operated ice-manufacturing plant at Bamberg, S. C.

Plans are said to be under way for a new power house at the coal mining properties of John W. McCullough, Friendsville, Md. (State Senator), to replace the station recently destroyed by fire.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a 56-in. boring mill; an 8-in. motor-driven sand pump, and a tank 10 ft. in diameter and 12 ft. high without agitating equipment.

Pacific Coast

SAN FRANCISCO, Nov. 26.

A ONE-STORY industrial arts building will be constructed in connection with a group of new buildings at the John Marshall junior high school, Pasadena, Cal., to cost $225,000. John C. Austin and F. M. Ashley, 1119 Detwiler Building, Los Angeles, are architects.

The Sunset Sanitary Mfg. Co., Los Angeles, manufacturer of enameled iron ware, has awarded a general contract to the Austin Co. for a one-story foundry, 130 x 140 ft., at 911 East Sixty-second Street, to cost $65,000.

The Bureau of Supplies and Accounts, Navy Department, Washington, is asking bids until Dec. 23 for 2000 lb. steel wool for the San Diego Navy Yard, schedule 2993; also for 5000 lb. bar monel metal for the Mare Island yard, schedule 2994.

C. J. Pugh & Co., Salem, Ore., manufacturers of canning machinery, contemplates the erection of a new plant.

The Ventura Refining Co., Oakland, Cal., will begin the construction of a new oil storage and distributing plant, consisting of three one-story buildings, estimated to cost $85,000 with equipment. R. Vane Woods, 505 Seventeenth Street, is engineer.

The Gay Engineering Co., 311 California Street, San Francisco, manufacturer of ice and refrigerating machinery, has preliminary plans for a one-story factory on Fourth Street, estimated to cost $50,000 with equipment.

Manual training shops will be installed in the new James A. Garfield senior high school to be erected at Los Angeles and consisting of 20 individual building units, estimated to cost $600,000. George Lindsey, Laughlin Building, is architect.

The Utah Power & Light Corporation, Salt Lake City, Utah, has preliminary plans for a hydroelectric generating station on the Green River, near Split Mountain, to develop a maximum of 140,000 hp. A power dam 225 ft. high will be built.

The Sundown Lumber Co., Puyallup, Wash., is said to have preliminary plans for rebuilding the portion of its mill and box factory recently destroyed by fire with loss estimated at $250,000 including machinery.

The Utah-Idaho Sugar Co., Salt Lake City, Utah, is considering the construction of a new mill on a tract of 1500 acres near Bellingham, Wash., estimated to cost $1,000,000. The project will include a power house and machine shop.

The Master Service Corporation, 1510 West Eighth Street, Los Angeles, has awarded a contract to F. L. Froley, 416 East Eighth Street, for a one-story machine and repair shop, 75 x 275 ft., to cost about $50,000 with equipment.

The city of Tacoma, Wash., has asked for bids on two steel towers 565 ft. high to carry three power cables in the longest transmission line in the United States, spanning the narrow channel at the south end of Puget Sound a distance of 6650 ft.

The Western Foundry Co., 546 Hood Street, Portland, Ore., will repair its plant, which recently sustained damage by fire, estimated at $25,000.

Canada

TORONTO, Dec. 1.

MACHINE tool sales for November compare favorably with those of the previous month. The outlook for the future is bright. It is reported that about $1,000,000 will be spent on equipment for the mining fields of northern Ontario during the next few months. Several additional power development schemes are proposed which will have a stimulating effect on the demand for this class of equipment. A number of American branch factories are to be erected in this district during the next six months for which tools and machinery will be required. It is also stated that the Canadian National Railways will spend large sums on rolling stock and other equipment which will have an indirect bearing on the machine-tool market. A good demand is reported for rebuilt and second-hand tools.

The Massey Concrete Products Co., Chicago, has secured 22 acres at Belleville, Ont., where it will erect a plant for the manufacture of cement products, sewer pipe, etc.

A. H. Black president Great Lakes Paper Co., Fort William, Ont., announces that his company will start work next spring on the erection of a large paper mill, adjacent to its pulp mill, to cost between $2,500,000 and $4,000,000. The power supply will be increased from 7500 hp., to 20,000. It is proposed to have the mill completed and in operation by April, 1926.

The Continental Engineering Co., 821 Federal Building, Toronto, will build a plant at Balsam, near the Dagmar Station, Ont., for the manufacture of concrete brick, etc.

The Montreal Furniture Co., Montreal, whose factory was recently damaged by fire is making repairs and will require some wood-working machinery and tools.

The Thermo Electric Co., Ltd., Brantford, Ont., has let general contract to C. C. Bowden, 80 Erie Avenue, for the erection of a foundry. Equipment will be purchased.

The Ruchards-Wilcox Canadian Co., London, Ont., manufacturer of builders' hardware, fireproof doors, etc., has awarded contract to the John V. Gray Construction Co., Ltd., for a factory to cost $30,000.

The New Brunswick Electric Power Commission is having plans prepared for the erection of an electric power house at Grand Falls, N. B. Hon. Dr. E. A. Smith is chairman.

Price Brothers & Co., Ltd., Montreal, will start work at once on a pulp and paper mill and power plant at St. Joseph D'Alma, Que.

The ratepayers of Kingsville, Ont., have approved a by-law to provide $12,000 for the purchase of an electric pump and other additions to waterworks system. William G. Long is town clerk.

The Brooke Mfg. Co., Dartnell Ave., Toronto, propose to erect a planing mill to cost about $200,000, for which considerable machinery will be required.

A. L. Landry, St. Octave de Metre, Que., will purchase equipment for a sash and door factory.

The Board of Education, 155 College Street, Toronto, propose to build a new technical school for which machine tools will be required, including motors, drills, lathes, shapers, saws and miscellaneous small tools.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in., base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1⅛ x ½ in. and larger	3.20c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.55c.
Toe-calk, ½ x ⅜ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds	4.05c.
Square, flats and hex.	4.55c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.30c. to 4.45c.	.....
Nos. 22 and 24	4.45c. to 4.60c.	5.10c.
No. 26	4.50c. to 4.65c.	5.15c.
No. 28*	4.60c. to 4.75c.	5.25c.
No. 30	4.70c. to 4.95c.	.....

Galvanized

	Per Lb.
No. 14	4.70c. to 4.85c.
No. 16	4.85c. to 5.00c.
Nos. 18 and 20	5.00c. to 5.15c.
Nos. 22 and 24	5.15c. to 5.30c.
No. 26	5.30c. to 5.45c.
No. 28*	5.60c. to 5.75c.
No. 30	6.10c. to 6.25c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
⅛ in. Butt...	—41	—24	⅛ in. Butt...	— 4	+19
¼ in. Butt...	—46	—32	¼ in. Butt...	—11	+ 9
1-3 in. Butt..	—48	—34	1-1½ in. Butt.	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap.....	— 5	+14
7-8 in. Lap...	—41	—11	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap..	—34	— 6	7-12 in. Lap..	— 3	+16

Bolts and Screws

Machine bolts, cut thread, 50 and 10 per cent off list

Carriage bolts, cut thread, 35 to 35 and 10 per cent off list

Coach screws, 45 and 10 per cent off list

Wood screws, flat head iron, 75, 20, 10 and 5 per cent off list

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c. to 4.50c.
Annealed soft	4.50c. to 4.75c.
Galvanized annealed	5.15c. to 5.40c.
Coppered basic	5.15c. to 5.40c.
Tinned soft Bessemer	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	18⅛c. to 19⅛c.
High brass wire	18⅝c. to 19⅝c.
Brass rods	16⅛c. to 17⅛c.
Brass tube, brazed	26⅛c. to 27⅛c.
Brass tube, seamless	22½c. to 23½c.
Copper tube, seamless	23¾c. to 24¼c.

Copper Sheets

Sheet copper, hot rolled, 21⅜c. to 22⅜c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14 x 20		
	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime	Seconds
			80 lb..	$6.15	$5.90
			90 lb..	6.30	6.05
			100 lb..	6.45	6.20
IC..	$11.25	$8.85	IC..	6.65	6.40
IX..	12.85	10.85	IX..	7.85	7.60
IXX..	14.40	12.55	IXX..	9.00	8.75
IXXX..	15.75	13.85	IXXX..	10.35	10.10
IXXXX..	17.00	15.05	IXXXX..	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	58c.
Bar	62c. to 65c.

Copper

Lake ingot	16½c.
Electrolytic	16 c.
Casting	15 c.

Spelter and Sheet Zinc

Western Spelter	7¾c.
Sheet zinc, No. 9 base, casks	12c. open 12½c.

Lead and Solder*

American pig lead	10c. to 10½c.
Bar lead	13c. to 15c.
Solder, ½ and ½ guaranteed	41c.
No. 1 solder	38c.
Refined solder	32c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	17c. to 18c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. 36c.

Old Metals

Business continues active and values are higher. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	12.00
Copper, heavy wire	11.25
Copper, light bottoms	9.75
Brass, heavy	7.00
Brass, light	5.75
Heavy machine composition	9.00
No. 1 yellow brass turnings	7.75
No. 1 red brass or composition turnings	8.25
Lead, heavy	7.75
Lead, tea	6.00
Zinc	4.00
Cast aluminum	16.00
Sheet aluminum	16.00